

DEVELOPMENT OF CREATIVE DANCE SKILLS THROUGH
PROBLEM BASED LEARNING FOR STUDENTS AT XI'AN
PHYSICAL EDUCATION UNIVERSITY

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A thesis submitted in partial fulfillment of the requirements for
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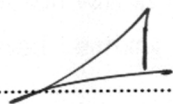


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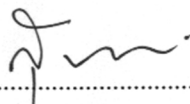
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ABSTRACT

The objective of this research were: 1) to development the creative dance skills; of students in Xi 'an Physical Education University by using Problem-based Learning; 2) Compare students' creative dance skills before and after the implementation of Problem-based Learning teaching. The sample group is 30 students from Xi 'an Physical Education University. Randomly take samples from a specific group.

Research tools include: 1) teaching plan Problem-based Learning; 2) creative dance skills test. Statistical analysis of the data showed that the standard deviation and t test were dependent samples.

The research result was as follows:

1. Problem-based Learning can effectively development students' creative dance skills.
2. After the Problem-based Learning teaching, students' creative dance skills are significantly higher than before the teaching.

Keywords: Problem-Based Learning, Vocational Students, Creative Dance Skills

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At this point, I have a lot of thoughts. Thanks to this beautiful school, I witnessed my youth and my growth. Four years of cold and heat, whether it is joy or bitterness, whether it is harvest or regret, this time will be the most precious memory of my life.

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"Catch the wind and catch the moon, don't stay, Pingqiang is a spring mountain everywhere." May our road ahead be long and bright.

When writing, I will be grateful for all the encounters. When I look to the future, I may be lonely and long. I hope that after my efforts, it will be sunny.

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Chapter 1

Introduction

Rationale

The state attaches importance to the cultivation of students' innovative skills. Under the background of the new era, China pays special attention to the cultivation of college students' innovative skills. In the Decision on Deepening Education Reform and Promoting Quality Education in an All-round Way published by the State Council, the Central Committee of the Communist Party of China in 2009, it was pointed out that higher education should pay attention to cultivating college students' creative dance skills, practical skills and entrepreneurial spirit, and generally development their humanistic quality and scientific quality (the Central Committee of the Communist Party of China, the State Council, 2009). In 2019, the Central Committee of the Communist Party of China and the State Council issued "China Education Modernization 2035", which pointed out: "Adhere to the development path of education in Socialism with Chinese characteristics, follow the laws of education, persist in reform and innovation, and cultivate socialist builders and successors with all-round development in morality, intelligence, physique, beauty and labor" (the Central Committee of the Communist Party of China, the State Council, 2019). In 2021, "Guiding Opinions of General Office of the State Council on Further Supporting College Students' Innovation and Entrepreneurship" also proposed to enhance the innovative spirit and skills of college students and development teachers' innovative education and teaching skills (the State Council, 2019).As an art form with the body as the medium, dance requires students to have higher practical skills and innovative skills.

Dance has not only become an important part of people's life, but also has epoch-making spiritual culture. Creating a pleasing and unique dance can make people mentally positive and physically energetic. There are many kinds of dances, and different forms of dance have their own merits. Only the dance with constant innovation can have vitality, meet the appreciation requirements of the broad masses of the people, and be in line with the spirit of the times. Every dance work is inseparable from the wisdom and hard work of the dance creators. creative dance skills can not only create ornamental value, but also create social value. An excellent dance work can not only beautify the soul and enrich the spiritual world, but also inspire people to reflect on their personal values and world outlook, and promote the spiritual and moral development of the whole society (Li Haiyan, 2022). Dance

creation teaching meets the needs of talent cultivation in today's society. creative dance skills is the use of the external dynamics of the human body to show the inner activities, which requires both physical and mental participation. It is not only related to human science, but also related to brain science.

Creative dance skills teaching can not only cultivate students' skills to learn techniques, but also cultivate students' innovative consciousness and practical skills. It can also cultivate students' unique aesthetic perspective and skills to grasp the characteristics of materials keenly, and cultivate students' comprehensive quality and perfect personality charm in all aspects, which is the key goal of college training. Therefore, creative dance skills is not only an important skills that dancers must possess, but also a compulsory course for undergraduates majoring in dance.

At present, there are some shortcomings in creative dance skills teaching. For along time, cultivating and improving students' creative dance skills has become the difficulty and focus of teaching. Through classroom observation, as well as consulting a large number of creative dance skills classroom summaries and classroom notes, it can be concluded that students have the following problems in teaching: First, the curriculum is relatively single and lacks systematicness. Although it covers basic contents such as theory, skills and practice, the knowledge system is relatively scattered and lacks organic connection. The teaching content focuses on theoretical explanation, and the proportion of practical links is small, so students have few opportunities to practice. Second, the evaluation method is relatively simple, mainly focusing on the completion of the final work, lacking the assessment of the creative dance skills process, and unable to comprehensively evaluate the students' creative dance skills. Third, there is a lack of practice platforms inside and outside the school, which makes it difficult to provide students with enough opportunities to exercise their creative dance skills, which restricts the development of creative dance skills. Faced with the above problems, it is urgent to optimize teaching methods, development students' creative dance skills and promote the overall development of dance teaching quality.

The Problem-based Learning provides a feasible path for improving creative dance skills technology. At present, the society demands more college students, and the traditional teaching mode can't meet the needs of students. Under the traditional teaching mode, most of them take teachers as the main body, ignoring the cultivation of students' independent thinking and innovative technology. Secondly, in the traditional teaching process, the relationship between teachers and students is unequal, teachers are in an authoritative position and students are in a subordinate

position. Students are often afraid to express their different ideas and blindly accept teachers' ideas. This unequal relationship between teachers and students not only has a bad influence on students' learning experience, but also restricts the benign communication between teachers and students. (Zhong Xiaojuan, 2021)

In dance teaching, under the traditional teaching mode, students have some problems, such as low interest in learning and low initiative. In order to change this phenomenon, we must expand dance teaching research and combine new teaching mode for teaching exploration (Zhang Jing, 2014). Problem-based Learning originated from the west, was first introduced by Chinese medicine, and then gradually expanded to other disciplines. Problem-based Learning is a kind of teaching mode which is teacher-led, problem-centered, student-centered, and emphasizes that students solve practical problems through cooperative inquiry. Compared with other teaching modes, Problem-based Learning pays more attention to students' inquiry into problems and the process of problem solving. Teachers design the teaching content into problem situations and bring them into the classroom, so that students can constantly accept challenging tasks or problems in the learning process, and finally solve the problems and tasks through the way of autonomy, cooperation and inquiry. Students can acquire new knowledge in the process of analyzing and solving problems, development their autonomous learning skills, and experience the sense of accomplishment of gaining knowledge, thus stimulating students' interest in learning. Dance has the characteristics of many kinds of dances, difficult skills and varied combinations. Applying Problem-based Learning in dance performance class can help students to brainstorm through cooperative learning with others, which can well solve more complicated problems in the learning process, deepen their understanding of technical movements, development students' dance skills and creative dance skills, enhance their physical health and development classroom teaching effect (Liu Xu, 2020).

To sum up, in recent years, China has paid special attention to the cultivation of students' creative dance skills which is very important for their future. Development. creative dance skills is the comprehensive embodiment of students' innovation and practical skills, and the cultivation of students' creative dance skills can't be neglected in dance teaching. However, at present, students' creative dance skills is still weak, and traditional teaching methods can't give full play to the role of improving students' creative dance skills. Therefore, teachers should expand the research of dance classroom teaching in colleges and universities, put forward new ideas of innovative teaching, promote the application of new teaching modes, constantly bring forth the old and bring forth the new in the reform of dance teaching, and explore a new mode

that is suitable for dance education and teaching and developments students' skills to create and edit dance.

Objectives(s)

1. To develop creative dance skills through Problem-based Learning for students of Xi'an physical Education University

2. To compare the creative dance skills of students before and after implementing the Problem-based Learning.

Research Hypothesis

After the implementation of Problem-based Learning, the students' development creative dance skills has been obviously.

Scope of the Research

Population and the Sample Group

Population

Dance students of Xi'an physical Education University is first grade of 5 classes of 30 students each, a total of 150 students.

The Sample Group

Through a cluster random sampling, a survey was conducted among 30 students from dance performance major of first grade vocational students for 1 class. Each class consisted of Creative dance skills a mix of high, middle and low lever.

The Variable

Independent Variable: Problem-based Learning

Dependent Variable: Creative dance skills

Content

Creative dance skills development through Problem-based Learning of dance students of Xi'an physical Education University, There are physical education courses of three chapter, 12 hours in total:

Chapter 1: Teaching basic dance movements (4 hours)

Chapter 2: The creation and editing teaching of dance movement and formation connection (4 hours)

Chapter 3: Complete creative dance skills with music and movements (4 hours)

Time

The research period is from October 2024 to December 2024 and is divided into the following stages:

1. Develop proposal research in October 2024
2. Modified and completed Revise and complete the course plan according to the learning method of Problem-based Learning in November 2024.
3. Experimental studies will be conducted from November 2024
4. The formal study will be conducted in December 2024.
5. Summarize the research and complete the research paper, which will be published in December 2024.

Advantages

1. The level of students. Problem -based learning can give full play to students' main role, enable students to actively ask and solve problems, development students' learning initiative, and development students' autonomous learning skills and creative dance skills by participating in classroom practice activities.

2. The level of teacher. By introducing Problem-based Learning into the classroom, teachers can better mobilize students' enthusiasm to participate in the classroom, achieve better classroom organization effect, and development teachers' teaching and design skills. At the same time, it broadens the selection range of teachers' teaching methods, and also provides theoretical reference for the research on improving creative dance skills under Problem-based Learning.

Definition of Terms

Problem-Based Learning

Howard (1969) first adopted the Problem-based Learning model in teaching at McMaster University in Canada. This problem-centered teaching model has quickly aroused widespread concern in the medical field. Subsequently, the Netherlands, Belgium and other countries successively adopted the Problem-based Learning model. With the world's attention to their own education in 1980s, Problem-based Learning has also developed to a certain extent. Meng Lingjuan (2019) pointed out that in 1990, Tokyo Women's Medical University began to implement Problem-based Learning, which marked the formal introduction of the Problem-based Learning model to Asia. Then, Asian countries such as Singapore and India began to introduce Problem-based Learning for teaching. After entering the 21st century, Problem-based Learning covers pedagogy, sociology, economics, natural science and other disciplines. As a successful

teaching mode proved by practice, educational researchers gradually realize that Problem-based Learning should not only be studied in university courses, but also be expanded to primary and secondary education, and constantly try and reflect on Problem-based Learning.

Problem-Based Learning is often translated as "Problem-based Learning" and "problem-oriented learning method", and it is also a widely concerned teaching mode in China in recent years. It is a kind of teaching mode, which takes teachers as the leading factor, students as the main body, takes questions as the starting point of learning, takes cultivating students' autonomous learning skills and comprehensive skills of inquiry as the teaching goal, and teachers use situational teaching to enable students to complete the knowledge construction of teaching content in the process of constantly asking questions and solving problems. It is divided into five teaching steps:

Step 1: Prepare before class. First, teachers need to clarify the teaching content, create situations and think about related issues. Secondly, it is the analysis of learning situation. Teachers should fully understand the basic situation of students, take students as the center, and from the perspective of students, find the most suitable teaching content from dance movements and dance contents. Third, set teaching objectives. Teachers should consider the requirements of setting dance teaching objectives comprehensively.

Step 2: Raise a question. According to the teaching objectives of the dance course, the teaching content is determined, and according to the dance content to be taught, the problem guide plan is issued to the students in advance, and the main problems are put forward, and the students are required to find relevant materials and videos about the problems according to the problems, carefully find and practice them, and record the relevant materials on the problem guide plan for use in class.

Step 3: Create a problem situation. Teachers plan and arrange teaching venues, design situations, guide students to think positively, take the initiative to explore and think about problems, be good at finding problems in learning, learn to analyze these problems, find out the causes of these problems and solve them in time, and finally development students' skills to explore and learn actively.

Step 4: Analyzing and solving problems. The group members discuss the questions raised by the teachers together, and the group leader arranges and collects relevant information and materials according to the division of labor. Then, the main questions raised by the teachers among the groups may lead to new problems in the analysis process. By combining the materials and videos of the problem guide case

with the students' previous dance knowledge, the problems are further analyzed, the difficulties in the problems are analyzed, and solutions and schemes are found.

Step 5: Show the results. Firstly, it is necessary to evaluate the effect after the implementation of the scheme, and secondly, to evaluate the whole process of the implementation of the scheme; And let the students show the results of the group in the form of group report. The students express and explain the knowledge they have learned and the design scheme, and compare it with the expected effect to confirm whether the problem has been successfully solved. In summing up the results and performance, learners are required to display the results in a variety of ways to development students' mastery of knowledge. Teachers can development students' skills to understand and express professional terms by reporting problem solutions to students, introducing knowledge principles and sharing learning experiences. At the same time, students should not copy book knowledge in expressing their opinions, but should have their own opinions and attitudes and fully expand their thinking to learn knowledge. In the whole process, teachers should encourage students to speak actively and give them the opportunity to fully express themselves. After the speech, their peers can make supplementary speeches and give feedback to answer questions.

Creative Dance Skills is the comprehensive embodiment of innovation and practice, and the embodiment of students' learning and application of special knowledge, special movements, technical skills, musical ability and aesthetic ability. creative dance skills is a combination of various technologies. In dance teaching, creative dance skills includes dance action creation, music literacy, aesthetic ability and knowledge integration ability. Training and training each technology is conducive to the formation of creative dance skills.

Research Framework

Using Problem-based Learning to development students' ceative dance skills. The research conceptual framework is as follows:

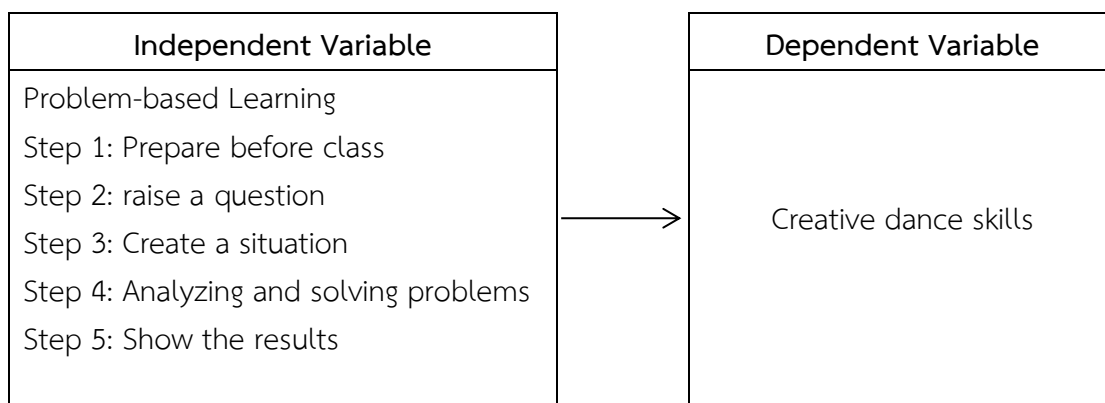


Figure 1.1 Research Framework

Chapter 2

Literature Review

This topic studies the application of Problem-based Learnings to development creative dance skills among students majoring in dance performance, and the theories and related studies put forward by the researchers areas follows:

1. Problem-based Learning
2. Creative dance skills
3. Related research

The details areas follows:

Problem-based Learning

1. The Meaning of Problem-Based Learning

Foreign scholars have studied Problem-based Learning earlier, and different scholars have analyzed the concept, application, specific methods and mechanism of Problem-based Learning.

Howard Barrows (1969) really applied Problem-based Learning to teaching as a teaching method. He believed that Problem-based Learning was both a course and a process. At present, the Problem-based Learning teaching method has not gained a unified cognition in academic circles.

Feng Da-ming(2004) pointed out that Problem-based Learning originated from Dewey's theory of learning by doing, and then William Heard Kilpatrick (1918), a student of Dewey, put forward Problem-based Learning.

Hong Jiajun (2018) interprets Problem-based Learning as Problem-based Learning, which is often translated as "Problem-based Learning" and "problem-oriented learning method".

Yang Yanjun's (2018) research interprets Problem-based Learning as Project-Based Learning, which is a teaching mode that has been widely concerned in recent years.

Xu Xiaohong (2022) pointed out that the Problem-based Learning teaching was founded by Howard Barrows, an American psychiatrist, at McMaster University Medical School, and was later widely used in medical education. At that time, medical education was subject-centered, and the learning methods and memory methods were particularly single, and most medical students lacked the combination of theory and practice. Scholars wanted to study a teaching model to return to

students' subjectivity, so that medical students could apply their knowledge and development their skills. In order to change the present situation of talent training, Professor Howard, who pioneered the Problem-based Learning model, began to carry out experiments. He asked students to study theory in the problem situation and increased their opportunities for practical exploration. After the experiment, remarkable results were achieved, which also proved that the Problem-based Learning method was suitable for teaching to help students learn theory and development technology.

Wang Anan (2022) pointed out that as early as 1993, at the famous Edinburgh World Medical Education Summit, the Problem-based Learning teaching method was recognized and recommended by the medical community, and the Problem-based Learning teaching method was introduced into medical fields in various regions and began to be popularized and applied.

Liu Yong (2022) pointed out that after learning from Sweden, the Netherlands and other countries that had achieved results in the early application of the Problem-based Learning model, some famous universities, such as Manchester Medical College and Harvard Medical College, adopted the Problem-based Learning model in succession. Among them, the University of Manchester has set up a three-year Problem-based Learning course, which emphasizes group counseling, autonomous learning and a very small number of teaching demonstrations, representing a complete departure from traditional courses.

In his research, Choi JinSun (2022) pointed out that almost more than 1,700 medical schools around the world have started Problem-based Learning teaching, and the number is still increasing. After searching and sorting out a large number of documents, it is found that the Problem-based Learning model prevailed in the medical field in the early stage, and most of the articles published by researchers were about the experiments of various disease treatment schemes. Later, the model gradually matured and was widely used in geography, management, engineering and other fields. In the 21st century, with the development of higher education, primary education and adult education, the application of Problem-based Learning mode in teaching is more and more comprehensive, and the research level is deeper. It is also a "novel scheme" that combines various learning modes and Problem-based Learning methods in teaching.

Mc Darby Meghan (2022) thinks: "Problem-based Learning is a method of learning and constructing knowledge. Under the guidance of teachers, students deal with problems by group discussion."

Ali K (2022) thinks: "The key of Problem-based Learning is to ask questions. Setting attractive topics can attract students to actively participate in the discussion of questions and get appropriate feedback and help from teachers, so as to acquire new knowledge."

Zhang Xiaoli (2022) believes that Problem-based Learning is a student-centered and teacher-led teaching mode. Through this teaching mode, not only knowledge but also learning methods can be acquired, which is consistent with the concept of "lifelong learning" advocated by today's society.

To sum up, Problem-based Learning is a kind of teaching mode which takes teachers as the leading factor, students as the main body, takes questions as the starting point of learning, takes cultivating students' autonomous learning skills and comprehensive skills of inquiry as the teaching goal, and teachers make use of situational teaching to enable students to finish the knowledge construction of teaching content in the process of constantly asking questions and solving problems.

2. Importance of Problem-Based Learning

Problem-based Learning is a Problem-based Learning method and a student-centered teaching method. Different from the traditional teaching mode, Problem-based Learning makes students become the main body of learning, takes problems as the basis of learning, solves problems in situations, changes teachers' dominant position in the classroom, and enables students to gain knowledge through autonomous learning. At present, a large number of scholars have applied Problem-based Learning to teaching practice.

Duan Jifeng (2018) pointed out that in the process of Problem-based Learning, students usually need to form groups to solve problems together. In this process, students need to learn to communicate with others, negotiate, and work together to complete the task. This experience of teamwork not only helps to cultivate students' team spirit and interpersonal skills, but also enables them to better adapt to the team work environment in their future careers.

Zhang Wenyi (2018) Based on Problem-based Learning, students are encouraged to explore and discover knowledge independently, rather than passively being indoctrinated by teachers. In the process of solving problems, students need to take the initiative to consult materials, seek help, conduct experiments, etc. These activities are all helpful to enhance their learning autonomy. When students get used to autonomous learning, they can cope with all kinds of learning challenges more flexibly and realize the goal of lifelong learning.

Xiao Duanping (2020) thinks that Problem-based Learning can help students learn to analyze problems, make solutions, implement plans and evaluate results when facing complex problems by simulating real situations. This process not only trains students' logical thinking and judgment skills, but also cultivates their innovative thinking and adapt skills.

Ruan Yue (2021) thinks that Problem-based Learning is helpful for students to combine theory with practice. Problem-based Learning breaks the separation between theory and practice in traditional teaching. In the process of solving problems, students need to use what they have learned to analyze, reason and experiment, so as to deepen their understanding of theoretical knowledge and learn how to use it flexibly in practice.

Chang Rutao (2022) thinks that Problem-based Learning is driven by problems, which are often closely related to students' daily life or future career, so it can greatly stimulate students' interest and curiosity in learning. When students realize that what they have learned is directly related to solving practical problems, they will be more active in learning and exploring the unknown, thus forming a continuous learning motivation.

To sum up, Problem-based Learning is of great significance in stimulating students' learning motivation, promoting the combination of theory and practice, cultivating problem-solving skills, promoting teamwork and enhancing learning autonomy.

3. Teaching Steps of Problem-Based Learning

Combined with the current academic research results, it is found that Problem-based Learning is divided into several steps, and the specific research is as follows:

Yin Qian (2023) thinks that the teaching principle of Problem-based Learning method has the following key elements:

Step 1 Preparation before class: Teachers prepare teaching-related content before class and ask questions.

Step 2 Group work: Teachers divide into groups, and students in the groups cooperate to collect and sort out the content related to the problem.

Step 3 Solve problems and doubts: Put forward solutions to problems through group members' discussion.

Step 4 Show the results: Show the final problem-solving results to teachers and students.

Hu Linghui (2023) believes that the teaching principle of Problem-based Learning method has the following key elements:

Step 1 Raise a question: The teacher puts forward the problems to be solved in teaching.

Step 2 Put forward a hypothesis: students put forward hypotheses by collecting relevant information.

Step 3 Create a problem situation: Teachers create situations according to the teaching content.

Step 4 Null hypothesis: Students collate the learning materials through group cooperation and test the hypotheses put forward.

Step 5 Show the results: show the learning results to teachers and students.

Liu Xu (2020) believes that the teaching principle of Problem-based Learning method has the following key elements:

Step 1 preparation before class: the teacher prepares the teaching content and teaching problems before class.

Step 2 Explain and demonstrate: the teacher demonstrates and explains in combination with the teaching content.

Step 3 Analyze the problem situation: teachers create teaching situations related to teaching problems.

Step 4 Analyze and solve problems. Students discuss in groups and propose solutions to problems.

Step 5 Summary and evaluation: the students summarize and show the solutions to the problems, and the teachers evaluate them.

Zhang Ranran (2020) believes that the teaching principle of Problem-based Learning method has the following key elements:

Step 1 Preparation before class: Teachers prepare the teaching contents and problems before class.

Step 2 raise a question: the teacher asks questions in combination with the teaching content.

Step 3 Create a problem Situation: Teachers create teaching situations related to teaching problems.

Step 4 Team cooperation analysis. Students discuss in groups and propose solutions to problems.

Step 5 Show the results: Students summarize and show the solutions to the problems.

Zheng Jianbin (2019) believes that the teaching principle of Problem-based Learning method has the following key elements:

Step 1 Preparation before class: the teacher prepares the teaching content and teaching problems before class.

Step 2 raise a question: the teacher asks questions in combination with the teaching content.

Step 3 collect material: Students collect materials related to the questions raised by teachers.

Step 4 solve problems. Students discuss in groups and propose solutions to problems.

Step 5 come to a conclusion: Students summarize the final discussion results and draw the final conclusion.

Conclusions from the analysis of the above literature reports, as shown in Table 2.1:

Table 2.1 Step Problem-based Learning

Author	Yin Qian (2023)	Hu linghui (2021)	Liu xu (2020)	Zhang ranran (2020)	Zheng jianbin (2019)	My Research detail
Step1	1) Preparation before class	1) Raise a question	1) Preparation before class	1) Preparation before class	1) Preparation before class	1) Preparation before class
Step2	2) Group work	2) Put forward a hypothesis	2) Explain and demonstrate	2) Raise a question	2) Raise a question	2) Raise a question
Step3	3) Solve problems and doubts	3) Create a Problem situation	3) Analyze the Problem situation	3) Create a Problem situation	3) Collect material	3) Create a Problem situation
Step4	4) Show the results	4) Null hypothesis	4) Analyze and solve problem	4) Team cooperation analysis	4) Solve problems	4) Analyze and solve problem
Step5		5) Show the results	5) Summary and evaluation	5) Show the results	5) Come to a conclusion	5) Show the results

As can be seen from the table, although the teaching mode proposed by each scholar is different, after careful study, the conclusion is that preparation before class, asking questions, creating situations, analyzing and solving problems and displaying results are common elements. On the basis of these scholars, combined with the characteristics of dance performance teaching, this paper thinks that Problem based learning is five steps

Step 1: Prepare before class. Select the most suitable teaching content for students, deeply understand and master the teaching content, analyze the difficulties and challenges of the teaching content and the challenges and difficulties that students will encounter in the learning process. Teachers can set specified action contents and questions and watch action videos according to the requirements of the syllabus. Teachers can provide teaching videos and materials, and the designated groups can prepare before class according to the set requirements, reasonably arrange classroom training contents and reasonably divide their work.

Step 2: Raise a question Teachers construct a teaching framework according to the teaching objectives and syllabus, define the teaching theme under the constructed teaching framework, and present the systematic and complete situational questions to students. Creating problems is the core of the implementation of Problem-based Learning teaching method, which plays a guiding role in students' learning process, and the difficulty of problem design will directly affect students' learning effect. Teachers should take students' existing knowledge level into account when designing questions, which requires teachers to have a certain grasp in the selection of questions.

In order to make the theme clear and easy for students to understand, complex questions should be simplified and clarified. The difficulty of design problems should have a progressive relationship, so as to make it from the simple to the deep, step by step and hierarchical, and at the same time, the question should be challenging for students' thinking skills. The problem can be designed as a teaching case by a certain technical action, and it can be expressed in various forms such as video, pictures and network, so as to make the problem open. The design of questions should be relevant, and there is often a certain correlation between dance movements in a certain technical link. When designing questions, it is necessary to link the questions before and after to help students recall multiple knowledge points in the process of solving problems. Students will continue to analyze and summarize on the basis of their original knowledge cognition, so that students can constantly think and rethink themselves, and clearly recognize their own knowledge defects.

Students can enrich their learning means and methods in solving problems and development their innovative thinking and problem-solving skills.

Step 3: Create a problem situation. Teachers plan and arrange teaching venues and design situations. Problem-oriented also emphasizes the importance of creating situations. On the one hand, it emphasizes the authenticity of situations. Teachers can create problem situations according to real phenomena or practical problems in life, students' knowledge, experience, background or hobbies, so as to arouse students' emotional resonance and arouse their enthusiasm for learning. On the other hand, the questions in the situation should be open, ill-structured, difficult and enlightening, and students need to think carefully before they can answer them.

Step 4: Analyzing and solving problems. In view of the problems raised, teachers guide students to form groups freely, and each group member clearly understands the specific tasks assigned by the teachers, makes contact according to the specific tasks, and actively assumes corresponding responsibilities. Team members solve problems by consulting materials, storing their own knowledge and seeking help from teachers or others. Through good communication, they form an effective cooperation within the group. All team members integrate the collected information to screen and select the best, form a preliminary solution, and then determine the final solution through continuous practice.

Step 5: Show the results Each group takes turns to show actions, test the learning achievements of each group, create a relaxed learning atmosphere, make students willing to show their learning achievements and build up their self-confidence. Teachers carefully observe the advantages and disadvantages of students in the process of action show, and students find their own problems when learning to observe other groups, discuss and communicate with each other, learn from each other's strong points and develop good study habits.

To sum up, different scholars have studied the teaching steps of Problem-based Learning, and the author has established the teaching steps of Problem-based Learning in this paper based on the teaching purpose of this paper and previous research results, including five parts: preparation before class, asking questions, creating situations, analyzing and solving problems, and displaying results, so as to provide guidance for the teaching arrangement of Problem-based Learning in the following text.

Creative Dance Skills

1. The Meaning of Creative Dance Skills

A.J. Starko (2001) thinks that creativity can be judged from two aspects: novelty and appropriateness. Novelty means that no individual or unit has applied for a concept or product before applying for a patent; Appropriateness can also be called appropriateness, such as being able to complete a project properly. Therefore, in the process of learning, it is a kind of creation to adapt and create the dances that have been learned by using various abilities.

Li Shunyang (2018), in "A Discussion on the Creative Ability of Dance Choreographers from a Theoretical Perspective", pointed out that creative dance skills is a practical technology with high difficulty and high requirements. It not only needs to have high knowledge and cultural literacy, keen insight, strong artistic creativity and unremitting exploration spirit, but also must create works based on realistic content, life and characters. Therefore, how to make yourself feel the created works and arouse the resonance of the audience needs to constantly development the creative dance skills. From the theoretical perspective, this paper analyzes the basic connotation and development of creative dance skills, and summarizes some effective suggestions to development creative dance skills in combination with several problems that are easy to appear in dance creation.

Ma Lu (2021) thinks that creative dance skills is a process of developing the body in an all-round way around the physical quality, psychological needs and expressive skills of the composition object, keeping up with the current popular trend of dance, and combining various reasons, changing and arranging the original action types and quantities, and matching reasonable music to create novel and unique single movements, combined movements and routine movements suitable for various people.

Kong Chunyan (2022) thinks that cultivating students' creative dance skills in the classroom means that students can combine the knowledge and skills they have learned to create different types of dances according to their own environment and other objective conditions in order to achieve various needs and useful purposes.

Zhou Xiaodan (2022) defines the creative dance skills as the skills to adapt, combine and create the mastered action materials according to various needs. Therefore, the creative dance skills is a comprehensive skills that combines aesthetics, innovation and practice. This Dance skills includes: the choice of action should be targeted and purposeful, and it should be aimed at physical exercise, and it should highlight the charm of art; The movements and musical styles should be consistent,

the rhythm should be grasped, and the unity of cohesion and complete sets of styles should be emphasized, thus inspiring and reasonably arranging the formation changes.

2. The Importance of Creative Dance Skills

Wang Wei (2016) pointed out in the article *How to development the Creative Ability of Dance Choreographers* that creative dance skills is an important part of the inheritance of dance culture. By teaching and learning creative dance skills, we can ensure that the essence and characteristics of dance art can be passed down.

He Yanmeng (2017), in the article *How to development the Creative Ability of Dance Choreographers*, thinks that in order to create good dance works, we should development our own creative dance skills, rely on the development of our own cultural level, accumulate social life experience, capture life image, expand rich imagination, strengthen dance cognition, and strengthen improvisation practice to development our creative dance skills, and use the combination of techniques to create excellent works with connotation, strong style and outstanding dance image.

Kang Xiaogang (2017), in "A Brief Analysis of Several Ways to development the Creative Ability of Dance Choreographers", pointed out that the development of dance creative technology is not only related to the dance skills themselves, but also involves the integration of literature, music, drama and other artistic fields. This helps students to form interdisciplinary knowledge structure and comprehensive quality. In the modern society with fierce competition, talents with comprehensive quality and innovative ability are more likely to stand out and become the best in the industry.

Guo Zirui (2018), in the article "Analysis of Measures to development the Creative Ability of Dance Choreographer", pointed out that dance is a form that people express their inner feelings through body movements in their early creation, and its creative success has a great relationship with the dance creative technology, which requires that the choreographer should have all-round qualities, overcome the difficulties in dance creation, feel the work itself with heart, and let the audience have emotional resonance.

Ding Zheyang (2019), in the article *How to development the Creative Ability of Dance Choreographers*, thinks that dance creation is a process that requires highly innovative thinking and imagination. Through creation, students can jump out of the traditional framework and try new dance forms, movements and arrangements, so as to exercise and enhance their innovative ability. Imagination is the soul of dance creation, which enables students to create unique and infectious dance works and

show their personal style and charm. Therefore, improving creative dance skills is conducive to cultivating new thinking and imagination of dance creators.

Zhai Lianxiang (2019) pointed out in the article "Analysis on Improving the Creative Ability of Dance Choreographers" that dance has become a major art form at present, and how to development the artistic atmosphere and stage characteristics of dance is a problem that every choreographer needs to consider. As a contemporary literary trend, dance is inseparable from the effective stage performance skills of performers and the reasonable collection of creative dance skills. Only by effectively linking creative dance skills with performance can we show the artistic connotation of dance and enhance the soul and value of dance creation.

Huang Yong (2019), in the article How to development the Creative Ability of Dance Choreographers, pointed out that the development of creative dance skills means that students need to constantly study and study dance art, including dance history, style and skills, so as to enhance their artistic accomplishment. And in the process of creation, students need to constantly examine and reflect on their own works, which is helpful to enhance their aesthetic ability and in-depth understanding of dance art.

Wang Wei (2020), in the article "The Role of Improving the Creative Ability of Dance Choreographer on Creative Success", pointed out that dance is one of the artistic ways to express art and emotion mainly through body movements. The success of dance works is mainly related to the creative dance skills. In order to ensure the high aesthetic and success of dance creation, the professional quality and ability of creative dance skills are also required. This paper analyzes the idea and concrete structure of choreography of current dance works, and at the same time provides corresponding measures for improving creative dance skills, so as to ensure that dance choreographers can create more excellent dance works and attract the interest of the broad masses of the people in China.

Weng Ting (2021), in the article How to development the creative dance skills and Professional Accomplishment of Preschool Education Students, pointed out that it is particularly important to master certain creative dance skills ,which plays an important role in students' own career development and the realization of dance classroom teaching objectives. Students should pay full attention to the important value of dance teaching, and consciously cultivate and development students' creative dance skills during the development of professional courses.

Liu Lu (2022), in the article "Research on Strategies to development the Creative Ability of Dance Choreographers", pointed out that dance presents themes, conveys connotations and emotions to the audience through body language, arouses the emotional resonance of the audience, and meets the spiritual and emotional needs of the audience. The increasing spiritual needs of the audience and the development of aesthetic ability determine that Chinese dance choreographers need to constantly development their creative dance skills, strengthen innovation, break away from convention, and create dance with new thinking, so as to make the expression forms of dance richer and more flexible, and make the tension and connotation of dance deeply explored and fully displayed.

Xu Lele (2022) thinks that creative dance skills can cultivate students' imagination and creativity: student creative dance skills is an artistic creation activity, which requires students to use their imagination and creativity to create unique dance works. By participating in the process of editing, students can not only cultivate their imagination and creativity, but also development their expressive skills and self-confidence.

Wang Xiaolian (2023), in "Research on the Cultivation of Middle School Students' Dance Creation Ability Based on Interdisciplinary Project-based Learning", pointed out that creative dance skills contain many creative elements and multidisciplinary knowledge and skills, which is an important component of artistic core literacy. Cultivating middle school students' creative dance skills is an objective need to implement the educational policy of "five educations simultaneously" and promote the reform of art courses. It is also an important way to development the national dance literacy and cultivate top-notch innovative talents in the field of dance creation.

Li Lei (2023) pointed out in "Strategies for Improving the Creative Ability of Dance Choreographers" that with the vigorous development of China's modernization process, the per capita income level has gradually developmentd, and the people have long been unable to be satisfied with simple food and clothing, and gradually seek a high-quality daily life, especially the requirements for cultural creativity have gradually increased. In order to better shape the dance performance art that meets the market prospects, it is necessary to create high-quality dances that meet the current aesthetic requirements of the people, so it is necessary to constantly development the creative dance skills. Considering the field of dance choreography, this paper discusses various countermeasures that should be adopted in the cultivation of dance creative skills.

Xie Zheng (2023) thinks that creative dance skills can increase the competitiveness of the dance industry: the development of creative dance skills technology can promote the competitiveness of the dance industry, make dance works more competitive in the market and have commercial value, thus promoting the development of the dance industry.

Xu Mengxuan (2023) thinks that creative dance skills can cultivate students' expressive skills and communication skills: students' creative dance skills needs students to express their thoughts and feelings through dance movements and emotions. In the process of creating and editing, students will gradually development their performance and communication skills, learn to express their feelings and thoughts by dancing, and communicate and cooperate with others.

Wang Ganmei (2023) thinks that creative dance skills can cultivate students' practical skills and sense of teamwork: student dance composition requires students to design and arrange a series of movements, which requires them to have certain practical skills and sense of teamwork. By participating in creative dance skills activities, students can exercise their hands-on skills and sense of teamwork, and development their cooperative skills and autonomous learning skills.

Yang Peng (2023) thinks that choreography can promote the development of dance art: the skills of choreography is an important factor to promote the development of dance art. Only creators with innovative skills can constantly bring forth new ideas and create works with more artistic value and appreciation, thus promoting the development of dance art.

Chang Li (2023) thinks that creative dance skills can development the level of dance performance: the development of creative dance skills can promote the composer to deeply understand and master dance elements, dance forms, dance styles and soon, thus improving the level of dance performance and making dance works more exciting and moving.

Ren Xiaoping (2024) thinks that creative dance skills can enhance the cohesion of the dance team, and the development of creative dance skills can promote the communication and cooperation between the choreographer and the members of the dance team, and enhance the cohesion and cooperation skills of the team, so as to better complete the creation and performance of dance works.

Li Xiran (2024), in the research of "Research on Creative Ability in Dance Teaching in Application-oriented Universities from the Perspective of Aesthetic Education", pointed out that it is very important to cultivate students' dance creative skills, which is helpful to cultivate excellent dance creative talents and create more

excellent original works. From the perspective of aesthetic education, this paper takes the application-oriented universities as an example to explore the training stage of creative dance skills, the selection of dance creation themes and the strategies for training creative dance skills in dance teaching, with a view to improving the creative dance skills of students in application-oriented universities.

To sum up, the skills of creative dance skills is of great significance to the development of dance art, the development of dance performance level, the cohesion of dance team and the competitiveness of dance industry. Therefore, the skills of choreography should be regarded as an important content in teaching.

3. The Influence of Problem-Based Learning

Liu Xu (2020) thinks that Problem-based Learning, compared with other teaching modes, pays more attention to students' inquiry and problem-solving process. Teachers design the teaching content as problem scenarios and bring them into the classroom, so that students can constantly accept challenging tasks or problems in the learning process, and finally solve the problem tasks through independent cooperation and inquiry. Students can gain new knowledge in the process of analyzing and solving problems, development their autonomous learning skills and experience the sense of accomplishment of harvesting knowledge, thus stimulating students' interest in learning.

Zheng Jianbin (2021) thinks that Problem-based Learning is different from traditional teaching methods, which makes students become the main body of learning, takes problems as the basis of learning, solves problems in situations, changes the dominant position of teachers in the classroom, and enables students to gain knowledge in autonomous learning. Through these changes, students can feel their importance in the classroom and naturally development their interest in dance learning and their skills to learn dance.

Zhou Rui (2023) believes that based on Problem-based Learning, problem-solving is the driving force of learning, teachers carefully design problems, create problem situations suitable for students' learning according to their learning conditions, students collect information, carry out cooperative learning, stimulate the collision of ideas in cooperation, develop all aspects of abilities, meet the requirements of the new curriculum standards, and help implement core literacy.

Yin Qian (2023) believes that Problem-based Learning emphasizes learners' subjective identity, focuses on cultivating students' problem consciousness as the lead, and attaches importance to training students' autonomous learning and dance arrangement skills under the guidance of teachers, which has foreseeable significance and value to make up for the shortcomings of traditional teaching mode.

Problem-Based Learning

1. Theoretical research on Problem-based Learning

Howard (1969) first adopted the Problem-based Learning model in teaching at McMaster University in Canada. This problem-centered teaching model has quickly aroused widespread concern in the medical field. Subsequently, the Netherlands, Belgium and other countries successively adopted the Problem-based Learning model. With the world's attention to their own education in 1980s, Problem-based Learning has also developed to a certain extent.

Meng Lingjuan (2019) pointed out that in 1990, Tokyo Women's Medical University began to implement Problem-based Learning, which marked the formal introduction of the Problem-based Learning model to Asia. Then, Asian countries such as Singapore and India began to introduce Problem-based Learning for teaching. After entering the 21st century, Problem-based Learning covers pedagogy, sociology, economics, natural science and other disciplines. As a successful teaching mode proved by practice, educational researchers gradually realize that Problem-based Learning should not only be studied in university courses, but also be expanded to primary and secondary education, and constantly try and reflect on Problem-based Learning.

Desai Killol N (2022), In the development and evaluation of the pop bl (patient-oriented Problem-based Learning). Module in pathology: a comparative analysis of performance and perception in a second-year pathology students points out that Problem-based Learning is a teaching guidance mode. In this mode, due to the complexity and systematicness of the problem, students' subjective initiative will be fully exerted. After independent questioning, they often get multiple answers.

Alduraibi Sharifa Khalid (2022), in the research of Medical Imaging in Problem-based Learning and Impact on the Students: a cross-sectional study, pointed out that the Problem-based Learning model has been applied to various disciplines, and found that Problem-based Learning has many advantages, but it also has some shortcomings. In particular, there are many theories of Problem-based Learning mode, but there is no clear concept definition, so it is necessary to make a unified and detailed interpretation of the theory of Problem-based Learning mode. The research

thinks that PBL teaching method can be called a teaching strategy, which provides students with necessary learning resources by creating meaningful, situational and real situations, stimulates students' desire to learn new knowledge through the guidance and guidance given by teachers, and developments their ability to discover, analyze and solve problems through experiencing the learning process.

Mehboob Bana Kiran Fatima (2022) put forward a Problem-based Learning method in the question "Self-assessment of active learning and critical thinking during Problem-based Learning: an explorative study", which is a learner-centered method. In the process of learning, the teacher is the promoter of learning rather than the source of knowledge for students. The problem is the tool of learning rather than the passive receiver of learning. By setting up problem situations, taking problems as the starting point of learning, taking students as the main body and teachers as the leading factor,

Ali Na Ba (2022), in the article "Problem-based Learning currency as a tool to increase medical student exposure to radiation oncology", designed teaching around real practical situations, expounded the application of Problem-based Learning in the classroom from the aspects of definition, theoretical basis, model construction, practical teaching and implementation evaluation, and emphasized the importance of problems.

To sum up, researchers have different views on the theoretical research results of Problem-based Learning, and conclude that Problem-based Learning has multiple levels of understanding and content in different teaching stages, and has diversified characteristics. Theoretical research mainly focuses on teaching design, learning methods and so on. Because there are many schools of Problem-based Learning, Problem-based Learning theory has no standardized and unified concept definition. Only by solving this problem can it be more recognized.

2. Practical Research on Problem-Based Learning

Yang Guang (2019), in the article "Application of Problem-based Learning Method in Nursing Continuing Education in Coronary Heart Disease Intensive Care Unit", found that applying Problem-based Learning to civil engineering courses can development students' thinking of building development, solve the problem that theory is divorced from practice due to many knowledge points, development students' learning enthusiasm and produce good learning results.

Rézio Sofia (2022) and others investigated whether teachers think that Problem-based Learning is related to the nature of science in Problem-based Learning and Applied Mathematics. The results show that most teachers think that this model can cultivate the understanding of the nature of science and implicit creativity.

Costas S (2022) applied Problem-based Learning to information technology courses in the article "Applied sociology of health and illness: a Problem-based Learning approach", and found that the application of Problem-based Learning can develop students' overall awareness and understanding of knowledge structure, and also greatly enrich students' global learning resources.

De Jong Nynke (2022), in the article "Lipped classroom formulas in a Problem-based Learning course: experiences of first-year bachelor European public health students", it is pointed out that the software engineering teaching in Silicon Valley in the United States adopts Problem-based Learning, and the application effect of Problem-based Learning is tested through three stages of "theory+actual combat+practice".

Iryna Lytovchenko (2022) discussed the value of Problem-based Learning in biomedical science in the article "Online Problem-based Learning: possibilities for engineering vocal acquisition in ESP course at technical university". After testing students' hands-on experiment and operation skills under Problem-based Learning, he pointed out that Problem-based Learning can make students' biomedical experiment learning better, on the other hand, it can develop students' skills of Problem-based Learning and autonomous inquiry learning.

Worapapha Arreerard (2022) applied this teaching model to English teaching in Middle East Technical University in the article "Exploring that different learning using satellite TV (EDL TV) and Problem-based Learning". The analysis of experimental data shows that Problem-based Learning has a significant impact on students' academic performance and self-regulation function.

Jannah Noraliyatun (2022), in "Nursing students' attitude towards Problem-based Learning in the classroom", pointed out that through the research on the influence of Problem-based Learning on primary school students' grammar learning, it was found that there was no significant difference in age and learning skills between senior and junior grades, and girls were better than boys in learning skills.

Leavy Justine E (2022), in a comparison of face-to-face and fully online Problem-based Learning: student results and staff experiences, 2014-2020, pointed out that the Problem-based Learning method should be adopted in the course of rational drug use or rational drug treatment. A lot of knowledge about medical

professional problems is taught in the classroom. The Problem-based Learning method can test theoretical knowledge in practice, help students to use drugs correctly and development the level and effect of clinical treatment.

Li Haiyan (2022) introduced Problem-based Learning into senior high school English writing course in the article "Application of PBL Teaching Mode in Senior High School English Writing Teaching", taking daily activities as an example to stimulate students' interest in inquiry and guide them to actively explore and learn step by step. While achieving the teaching goal, it makes good preparations for students' independent inquiry learning in the future.

Louis (2022), Pass the teaching plan in the article "Teaching Industry 4.0 Technologies in a learning factory through Problem-based Learning: case study of a semi-automated robotic cell design". A case study examines the actual effect and process evaluation effect of Problem-based Learning design, and draws the conclusion that "Problem-based Learning is superior to traditional teaching in cultivating students' ability to analyze and solve practical problems". The designed Problem-based Learning process evaluation materials can also diagnose students' classroom learning status in time, understand students' individual differences and development every student.

To sum up, with the popularization of Problem-based Learning theory, the application of Problem-based Learning is no longer limited to medical education, but also widely used in basic education. Experiments show that Problem-based Learning can have a positive impact on the teaching effect of other disciplines. Results The experiment is the same as the medical application, which can enhance students' interest in learning, make students more willing to communicate with others, cultivate students' skills to discover, analyze and solve problems in practice, and development the teaching effect obviously.

Related Research

1. Research on Dance Teaching Mode

Ma Hui (2016), in the research of "Experimental Research on Subject Participatory Teaching Mode in College Sports Dance Elective Courses", pointed out that the subject participatory teaching mode takes teachers and students as the main body, and teachers and students participate in the whole teaching activities together. Students are teachers, and teachers are also students. The whole teaching process is centered on students' development. Experiments show that the experimental group is superior to the control group in learning interest, skill level and cooperation skills, with significant differences.

Liu Ruilin (2019) found through experiments that the teaching effect of the experimental group in small group teaching mode is better than that of the control group in traditional teaching mode, because small group teaching mode can formulate different teaching contents and choose different teaching methods according to students' different characteristics, which can development students' self-confidence in dance. Small group cooperative learning can development their enthusiasm and enthusiasm for learning, which is conducive to mastering dance techniques, improving teaching effect and promoting students' development towards all-round talents.

Xu Dongqin (2020) By setting reasonable teaching objectives and cooperative learning in groups, students' interest and enthusiasm in learning dance can be developmentd, their knowledge and skills can be developmentd, and the teaching effect can be promoted. Colleges and universities should incorporate the program cooperative learning teaching mode into the teaching of dance elective courses.

Zhou Ranran (2020) applied Problem-based Learning to the teaching of the special skill of sports dance "Cha Cha" in "Research on the Application of PBL Teaching Mode in the Teaching of the Special Skill of Sports Dance" Cha Cha ",and found that Problem-based Learning has more advantages in improving the cha cha skills, dance skills, theoretical knowledge and physical fitness of sports dance majors.

Some scholars have also studied the application effect of Problem-based Learning in dance teaching. Zheng Jianbin (2021), in the research on the application of PBL teaching method in dance teaching, found that Problem-based Learning method can obviously development most students' interest in learning dance, effectively change students' learning motivation, development students' initiative in learning dance, cultivate students' comprehensive skills, development the

professional quality of dance teachers, and enrich the practical teaching cases of applying Problem-based Learning method in dance teaching.

Wu Zhe (2022), in "Exploration on the Application of Situational Teaching Mode in Dance Courses in Higher Vocational Colleges", thinks that the demand of college students is getting higher and higher, and the traditional teaching mode can no longer meet the needs of students. In order to adapt to the reform of physical education in the new period and development students' comprehensive quality, participatory teaching mode is introduced into dance teaching. The experimental results show that participatory teaching has both advantages and limitations. It is necessary to introduce various teaching modes into dance teaching, integrate their advantages and development students' comprehensive quality.

Zeng Qingling (2022), in the application research of "MOOC+ flip classroom" in college sports dance teaching, found through experiments that the emerging flip classroom teaching mode can develop the dance technical level, development students' learning enthusiasm and development the technical level. Finally, it summarizes four conditions that need to be met for the success of the flipped classroom teaching mode: video quality before class, diversified evaluation methods, students' learning skills, and sufficient time to learn dance techniques.

Chen Lang (2022), in "Exploration of Mixed Teaching Mode of Pediatric Courses under MOOC Background", found through experiments that cooperative learning can develop students' enthusiasm for participation in dance teaching more than traditional teaching mode. Let students keep consistent learning goals, arouse their sense of responsibility, cooperate and accomplish their learning goals together; Through cooperative learning, students' cooperative consciousness and skills are significantly developed, and their ability to find problems, solve problems cooperatively and innovate thinking is developed.

Chen Jingyu (2022) found through experiments that the multi-element teaching mode can make students have a positive classroom experience, stimulate students' interest in sports, make the classroom atmosphere active, and change the normal state in action learning. The test result of the experimental group is better than that of the control group.

To sum up, the research on the application of dance teaching mode in domestic colleges and universities mostly takes non-dance professional classes as experimental objects, which also proves that the application of new teaching mode in dance classroom can effectively develop the teaching effect. At present, researchers mainly apply inquiry and cooperative teaching mode, with the main

research goal of improving students' learning interest and motor skills, and the classroom group cooperative learning as the teaching method. There are few researches on how to use network media to assist students' learning and development students' analytical and solving skills. Generally speaking, the new teaching mode has a certain research foundation in college dance teaching, but it needs to be further combined with the new teaching mode to expand the research.

2. Research on the Skills of Dance Skills and Arrangement

RISNER, D (1995) in the process of editing, the choreographer should clearly understand that rehearsal is not limited to dancing, but also the cultivation of dancers, the meaning they create, the need to meet, the exchange of ideas between them, and the sharing of frustrations during rehearsal. Pay more attention to getting other things from one thing.

Finlay, Linda (2002) will make their relationship with another person, object, event or phenomenon richer and have different opinions by creating and cultivating them. And dance is a medium of communication. Using dance as a secondary analysis or communication tool is what many researchers are doing, which is also a very important contribution. Cultivating creative editing in the form of dance can not only development creative editing skills, but also development cognition of other aspects.

Blumenfeld-Jones, Donald (2004) explained that his research process includes the cultivation of phenomenological "cognitive way" through dance and arrangement. His artistic process involves the cyclic and repeated exploration of five "ways of consciousness": determination, immersion, objective observation, physical memory and evaluation of correctness through sensation. Similarly, this process needs to be immersive, and remind yourself of your inner state during exercise and rest. Perhaps, it is this kind of "feeling right" after repeated, impromptu and exploratory dance experience, which means that to obtain this embodied knowledge, we need to pay attention to the dynamic interweaving of body and social world, experience and expression.

There are many literatures on Dance skills in dance major, and the scope involved is wide. In modern dance, Zhang Shouhe (2006), as a professor and director of Beijing Dance Academy, proposed that choreographers should have creative thinking skills. The cultivation of choreographers should not only teach choreography techniques, but also respect and attach importance to students' creative thinking skills, and the choreographed works should be creative. Pay attention to each student as an independent individual. No matter from the perspective of innovation or

innovative methods, everyone has unique ideas and innovations, and we should constantly encourage and stimulate students' creative passion.

Mars (2007) described the design of "Zhengge Canon" and "Biange Canon" respectively from three elements of time, space and strength in the article "On choreography techniques-design thinking of Kaye". Kaye choreography technique is a very important choreography technique, and its application can make dance works bring different visual impacts to the audience and make them look more interesting.

Zhang Shouhe (2009) mentioned that students' creativity and imagination are the key points in the training of choreographers in Beijing Dance Academy, constantly strengthening the theoretical knowledge and professional skills of choreographers, and constantly building a systematic theory and method of choreography, so as to lay a talent foundation for the dance cause.

In China folk dance, Huang Mingzhu (2011) pointed out in "Teaching Practice Project Teaching Method of Minnan Folk Dance Creation" that in order to cultivate students' dance skills of Minnan folk dance, folk dance has a profound national cultural heritage, and the original dance style and characteristics should be maintained in the process of innovation. As a creator, we need to constantly explore the artistic values in line with our nation. Secondly, we need to know a variety of basic knowledge and techniques of dance, such as choreography techniques, modern choreography thinking, creative thinking, etc. The creation of folk dance is not only limited to the knowledge of the nation, but also requires comprehensive understanding and cognition.

Wu Bei (2013), in *The Cultivation of Creative Thinking Ability of Dance Choreographers*, is mainly aimed at cultivating future choreographers, and the cultivation of creative thinking skills is particularly important. For a choreographer, it's meaningless if there is no innovation in his works. Although the creative thinking skills is congenital, it can be developmentd through cultivation. The article mentions three aspects of cultivation: creative thinking, image thinking and imagination. The cultivation and development of creativity, using improvisation to cultivate, has a good effect. Image thinking is mainly for students to explore from classroom, life, social activities and so on. The cultivation and development of imagination is particularly important. For editors, imagination is the driving force to promote the development of editors, and it is also the embodiment of uniqueness different from others.

Luo Yun (2014), in "Discussion on the Training Method of Creative Thinking Ability of Dance Choreographer", proposed that the choreography of dance sets should be based on the characteristics of choreographers, sports aesthetics rules and international development trends, and fully consider action elements, rhythm elements, spatial elements and time elements. Editors should exert their imagination, creativity and appreciation to complete an excellent work with artistic appeal.

Deng Xin (2014), in "Research on Dance Creation Strategy", thinks that creative dance skills are very important for teaching, training and performance competitions. At present, there are four main problems in the cultivation of creative dance skills in colleges and universities: 1. Traditional dance teaching methods restrict the cultivation of creative dance skills. 2. Dance creation is just a simple movement. 3. Lack of teachers' ability. 4. The restriction of college sports dance curriculum on the cultivation of students' creative dance skills.

Li Jin (2015), in Exploration of "Innovative" Talents Training —— Taking Dance Creation Course of Music and Dance Major of Sichuan Conservatory of Music as an Example, interprets innovative talents in the training of "innovative" dance talents, and thinks that innovative consciousness and innovative thinking should be possessed by innovative talents. And can be creative in solving problems. The editors trained by the school not only have the knowledge and skills of editing, but also have the interdisciplinary knowledge of life, society and related subjects. Only by constantly enriching their own knowledge structure and transferring and applying the acquired knowledge will it be more conducive to the creation of works. It is also mentioned that "understanding" is also very important for the innovation of works, because everyone is an individual, so "understanding" is closely related to the experience and feelings of the creators.

Wang Lu (2017), in "Research on the development of Dance Creation Ability under Project-driven Teaching", pointed out that dance creation is an art form combining body and mind, which can not only exercise students' physical coordination, flexibility and strength, but also express their emotions, release pressure and promote mental health through dance. Thinking and exploration in the process of dance creation is also helpful to cultivate students' patience, perseverance and self-confidence, which are crucial to personal growth and development.

In terms of training creative talents, Weng Shihui (2017) mainly divided the training of the choreography direction of Quanzhou Normal University into three dimensions in "On the Three Dimensions of Talent Training of the Master of Arts in Normal Universities". The three dimensions are as follows: 1. Taking the local culture

as the foundation of creative editing, constantly enriching the national culture of the region in various ways, and laying a solid foundation for creative editing. 2. Take innovation skills as the core of editing works, and let students make great efforts to edit them, so as to development students' editing skills in a targeted way through the form of result assessment. 3. Being put into practice is beneficial for students to step into the society and quickly connect with the society. Therefore, students' practical skills in school needs to be paid attention to. Through the above three dimensions of creative editing training, the following dimensions of creative editing skills are extracted: 1, cultural foundation, 2, innovative skills, and 3, practical skills.

Wang Haiying (2018), in *Research and Practice of Guangdong Intangible Cultural Heritage and Innovative Dance Talents Training Mode*, proposed that the cultivation of innovative talents should respect culture and innovate it, and the cultivation of innovative talents should pay attention to theoretical knowledge learning, because the creation of intangible cultural heritage dance needs to pursue the inheritance of intangible cultural heritage, and the cultivation of innovative talents should respect and innovate it, paying attention not only to intangible cultural heritage, but also to comprehensive cultural literacy. It can be seen that the cultivation of dance skills requires higher cultural quality of the choreographer, and it is necessary to dig deep into the connotation of non-legacy dance and original dance movements, and make artistic processing and innovation on the original movements.

Carter, Celina (2020) has been studying how to express and write an art-based research process, which is embodied and intuitive. After rethinking and criticizing the experience of using dance and choreography as a survey method, it is found that GRAHAM technology provides a path through which key questions can be raised in the cognitive and embodied sense. This process of using "dancing data" to analyze and disseminate the findings is generative, because it provides new insights into the possible changes of roles and a way to capture life experience.

Xiao Wei (2022), in "Analysis on the Application of Dance Choreography Techniques", put forward that dance art as an artistic expression way of expressing feelings and feelings must reflect authenticity, innovation, aesthetics, creativity and wonder in the application of dance choreography techniques. At the same time, it is pointed out that montage can be combined with various choreography techniques to make dance works more unique in visual effect.

Hou Xueyan (2024) pointed out in the article "Harmony and Combination of Action Elements in the Creation of Dance Works" that theme elements, plot elements and diversified factors of dance works need to be integrated in the creation process of dance performance dance, and dance performance dance is more artistic appreciation than competitive sports dance.

Wangxin (2024), in "Contemporary creative dance skills", thinks that the choreography of dance competition routines should follow the principles of comprehensiveness, rationality and artistry. She divides the steps of dance creation into four stages: 1. Preliminary conception and drawing up the choreography scheme. 2. The primary stage of action. 3. Routine arrangement stage. 4. Routine development stage. Finally, it is pointed out that dance creation is developing towards the trend of more difficult movements, unique performance style, creative innovation, highlighting the characteristics of dance events and being more competitive.

Chen Lin (2024), in the Guide to Dance Creation, thinks that the creation of difficult dance movements is an important link in the Latin dance performance dance competition. He came to the conclusion that technical movements are used more and more in Latin dance performance competitions, and the difficulty is getting higher and higher. Among them, the most commonly used technical movements are lift and rotation.

Through the research process of dance Dance skills and Problem-based Learning, it can be found that foreign research on dance Dance skills focuses on the cultivation China in depth and breadth. There is an obvious disconnect between theoretical research and practical research in teaching practice in China. In the research of "Problem-based Learning", foreign countries have scientifically and reasonably constructed the evaluation system, which has been widely used in various fields and achieved remarkable results. However, the domestic research in teaching practice is relatively systematic. With the gradual popularization of digital teaching methods, the development of Problem-based Learning in China has been restricted by many factors, such as poor self-management skills of students, poor anti-interference skills, and differences in regional teaching conditions. Therefore, the teaching practice research of this paper will be based on the dance teaching situation, starting from the traditional classroom, and carry out the practice research of Problem-based Learning for deep learning, in order to promote the occurrence of students' deep learning.

Chapter 3

Research Methodology

Development of Creative Dance Skills through Problem Based Learning for Students at Xi'an Physical Education University. In this study, the methodology of experimental research has the following procedures:

1. The population / the sample Group
2. Research Instruments
3. Data Collection
4. Data Analysis

The Population/ The Sample Group

Population

Undergraduate students of Xi'an physical Education University, is first grade of 5 classes of 30 students each, a total of 150 students.

The Sample Group

Through a cluster random sampling, a survey was conducted among 30 students from dance performance major of first grade vocational students for 1 class. Each class consisted of Creative dance skills a mix of high, middle and low lever.

Research Instruments

The research tools used by the researchers include a Problem-based Learning and the following assessment criteria for dance choreography skills, as follows:

1. Teaching Plan Based on Problem-based Learning

1.1 This teaching plan is designed according to the basic principle and mechanism of Problem-based Learning and the teaching characteristics of dance performance specialty.

1.2 According to the teaching objectives and syllabus of dance performance major, combined with the teaching objectives, contents and assessment standards of the course, complete the teaching plan.

1.3 According to relevant theories and existing research, complete the experimental teaching plan.

Using Problem-based Learning to development students' Creative dance skills. There are three chapters:

Chapter 1. (Teaching of basic dance movements) This is a very important basic stage, which lays a solid foundation for students' subsequent technical progress in dance performance and creative dance skills. Learning content: the importance of basic dance movements, basic movement exercises (basic body, eyes, techniques, footwork, lower body opening, stretching, straightening and standing), combined with Problem-based Learning. By using Problem-based Learning, it laid a solid foundation for the subsequent creative dance skills. Four hours in all.

Chapter 2. (action analysis and choreography teaching) analyzes dance movements, which is very important to development students' choreography skills. Students need to explore dance movements in combination with Problem-based Learning groups. Learning content: choreography and combination, formation transformation, and choreography and combination. Then, I feel about music, get familiar with music, and then use Problem-based Learning to create and arrange dances in groups according to the music provided by teachers. Four hours in all.

Chapter 3. Feel the music, get familiar with the music, and then use the Problem-based Learning method according to the music provided by the teacher.

A total of 12 class hours. Each lesson plan strictly follows the requirements of Problem-based Learning, including:

Step 1: Preparation before class

Step 2: Raise a question

Step 3: Create a problem situation

Step 4: Analyzing and solving problems

Step 5: Displaying results

which includes five stages

The first step is to prepare before class. Applying Problem-based Learning in dance class is both a challenge and a new attempt for teachers and students. Dance class under Problem-based Learning requires teachers to make full preparations. Besides studying the theory of Problem-based Learning, there are also certain requirements for teachers' professional quality.

1. Teachers need to clarify the teaching content, create situations and think about related issues. Dance teaching has no fixed book knowledge, but a complete dance movement. Teachers need to make clear the teaching content, make an in-depth analysis of the teaching content, analyze the difficulties and problems that students are prone to, and design problems from the perspective of students. The

creation of problems is the most critical step in the implementation of Problem-based Learning method, and the problems should not be too complicated.

At the same time, we should pay attention to the difficulty of knowledge involved in the problems, pay attention to the mastery and practice of knowledge in the course, and avoid students' resistance.

2. Is to analyze the learning situation. Only by truly understanding the basic situation of students, taking students as the center and starting from the students' point of view, can teachers find the most suitable teaching content from the dance movements and dance contents, so as to development the students' dance movement level and dance feeling, and at the same time help teachers find the difficulties and problems that are easy to appear in teaching.

3. Set teaching objectives. Teachers should consider setting the requirements of dance teaching objectives in an all-round way, such as whether they need to perform, exercise or cultivate students' interest and skills in dance, and formulate teaching objectives that meet the development of students and meet the needs of society.

The second step is to ask questions. According to the teaching objectives of the dance course, the teaching content should be determined. According to the dance content to be taught, the students should be given a problem guide plan one week in advance, and the main problems should be raised. Students are required to find relevant materials and videos about the problems according to the problems, carefully find and practice them, and record the relevant materials on the problem guide plan for use in class.

The third step is to create a situation. Teachers plan and arrange teaching venues, design situations, guide students to think positively, take the initiative to explore and think about problems, be good at finding problems in learning, learn to analyze these problems, find out the causes of these problems and solve them in time, and finally development students' skills to explore and learn actively.

Therefore, teachers must make full preparations before using Problem-based Learning, such as preparing some videos or materials that can stimulate students' interest in dance learning, organizing students to watch these videos in class and after class, or letting students go home to watch them with multimedia devices such as computers on weekends, so as to stimulate their interest in learning and guide them to learn to think independently.

The fourth step is to Analyzing and solving problems. Teachers organize teams according to the convenience of students' learning and the principle of students' voluntary participation. The number of groups is 5-7. Teachers make final adjustments and determine the grouping situation. This process is to make students get along with the team members easily in the group, so that they can give full play to the initiative of the team members and express their views. This also promotes the competition among the groups and developments their skills to analyze problems. A team leader is selected between the groups to manage the organization group and a deputy team leader. The group members discuss the questions raised by the teachers together, and the group leader arranges and collects relevant information and materials according to the division of labor. Then, the main questions raised by the teachers among the groups may lead to new problems in the analysis process.

By combining the materials and videos of the problem guide case with the students' previous dance knowledge, the problems are further analyzed, the difficulties in the problems are analyzed, and solutions and schemes are found. After collecting good information, group members discuss, discuss and study together, and study the information materials they have found. The orderly division of labor among groups can stimulate students to feel the fun of learning. Students learn independently, cooperate and communicate, which is also the core content of Problem-based Learning. In this process, group members search for information, screen information, communicate with each other and practice according to the tasks assigned by their own groups through the materials and videos collected by themselves and various resources provided by teachers. Finally, the groups jointly sort out, process and rehearse, and finally form the final solution to the problem, and rehearse before the results are displayed, and finally determine the results.

The fifth step is to show the results. In the achievement display, each study group should take turns to display the problem results, which is the most meaningful link in Problem-based Learning method. The group achievement display drives the classroom atmosphere, everyone participates in it, exercises their thinking skills, cultivates their independent consciousness, enhances their confidence in showing themselves bravely, and allows students to show their cooperative achievements in an active atmosphere. During the exhibition, other groups should learn and summarize the forms of dance movements, as well as the fluency and aesthetic feeling of the formation movements of the whole dance, so as to learn from each other's strengths and enhance their own level. Finally, the problems in the process are put forward and solved.

Table 3.1 Detailed teaching contents

Teaching Process	Chapter 1: Basic dance movement teaching	Chapter 2: Dance formation and movement connection teaching	Chapter 3: Combine music to create dance.
Teaching content and teaching means	Develop creative dance skills with problem-orientation. Teachers situations according to the course content, analyze and solve problems in the form of group discussion in the course, and finally show the results, and gradually lead students to develop creative dance skills.		
Requirements focus	Students should learn and master the hand shape, hand position, basic movements and dance characteristics of dance, and can show them.	Formations and master the connection between basic dance movements and formation changes.	Mainly for music perception, familiar with music, and then according to the music provided by teachers for group cooperation to create dance.
Teaching cycle	1-2 weeks	3-4 weeks	5-6 weeks

1.4 The researchers submitted these plans to three experts for review to verify their accuracy. Experts have verified the effectiveness of the course plan development process. The consistency index of the test is between 0.67 and 1.00, and the following levels are considered:

The score is +1. There is a view that "meet the definition/measurement objectives"

The score is 0. There is a view that 'whether it meets the definition/measurement goal is uncertain.'

The score is -1. There is a view that is inconsistent with the definition/measurement goal.

The consistency index is greater than or equal to 0.50, which is considered suitable for further study. The result of planning IOC at least once is 0.66-1.00.

The researcher revised the teaching plan according to the expert's suggestion to prepare for the next experiential teaching.

2. Evaluation Form of Creative Dance Skills

The evaluation table contains 3 evaluation contents, as follows:

2.1 Master the basic dance hand positions.

2.2 Master the skills to create dance formation changes.

2.3 Master the skills to combine dance music with basic dance creation movements.

The researchers designed a Creative dance skills evaluation scale based on dance skills creation skills and combined with learning skills evaluation tools. It includes an evaluation dimension and 4 evaluation contents, which are measured according to the measurement steps and finally record the measurement values. The evaluation table contains 4 evaluation contents.

1. Analysis of the content and skills of choreography.

2. Learn the theories and methods to evaluate the skills of choreography.

3. According to the definition and skills of choreography, combined with the evaluation tools of learning skills, the researcher designed the evaluation scale of choreography skills. It includes an evaluation dimension and four evaluation contents, which are measured according to the measurement steps and finally recorded.

Measurement consistency standards areas follows:

The score is +1. There is a view that "meet the definition/measurement objectives"

The score is 0. There is a view that 'whether it meets the definition/measurement goal is uncertain.'

The score is -1. There is a view that is inconsistent with the definition/measurement goal.

The consistency index is greater than or equal to 0.50, which is considered suitable for further study. The IOC value of each scoring standard is 0.67-1.00

Table 3.2 Evaluation Form of Creative dance skills

Evaluation on items	Score and criterion		
	3	2	1
Creation techniques (40 points)	The dance theme is clear, the structure is complete, the conception is ingenious, the stage scheduling is reasonable, and the teacher scores 30~40 points.	The dance theme is clear, the structure is complete, and the stage scheduling is reasonable. The teacher's score is 15~29.	The dance theme is not clear enough, the structure is not complete enough, the stage scheduling is not reasonable enough, and the teacher's score is < 15.
Dance movements (20 points)	The dance movements are very standardized, coordinated and beautiful, and the teacher scores 15-20 points.	The dance movements are standardized, coordinated and graceful, and the teacher scores 8-14 points.	The dance movements are not standardized, coordinated and graceful, and the teacher's score is <8.
Music rhythm (20 points)	The dance rhythm is very accurate, and the teacher scores 15-20 points.	The dance rhythm is more accurate, and the teacher scores 8-14 points.	The dance rhythm is not accurate enough, and the teacher's score is <8.
Arranging performances (20 points)	Dance arrangement and performance can better reflect the theme and artistic conception of the work, and the teacher scores 15-20 points.	The choreography and performance reflect the general theme and artistic conception of the work, and the teacher scores 8-14 points.	The and choreography performance did not well reflect the theme and artistic conception of the work, and the teacher scored < 8.

4. Modify the checklist according to the suggestions.

5. Submit the evaluation form. Check the accuracy with the thesis instructor and make corrections.

6. Submit the evaluation standard of Creative dance skills to three measurement and inspection experts. Experts check the validity of the content and calculate the reward (objective consistency of indicators: IOC). Consistency index of project judgment criteria.

The measurement consistency is as follows: The score is +1. Some people think that this is "confirming that the evaluation standard meets the specified measurement requirements"

The score is 0. Some people expressed the opinion that "I'm not sure whether the evaluation standard meets the specified measurement requirements.

The score is -1. Some people think that "the standard does not meet the prescribed measurement requirements."

The consistency index of each evaluation content is greater than or equal to 0.50, which is considered suitable for research. The objective consistency (IOC) value of each question is 1.00.

7. Check the relisks of measurement standards that can be used for research.

Data Collection

The data collection is as follows:

1. Invite 3 experts, issue official documents of experts of Bansomdejchaopraya Rajabhat University, and provide information on research content and research instruments: lesson plans and assessment form, for consideration Index of Objective Consistency (IOC). Collect IOC inspection data from 3 professional experts.

2. This research is experimental research. According to the researcher's established assessment form, the scores were scored before and after the experiment, and the evaluation data were collected. The following is the experimental design:

Table 3.3 Experimental Design

Group	Pretest	Experimental	Posttest
R	O ₁	X	O ₂

The meaning of the symbols used in the experimental design.

R means Random Sampling

X means Experimental

O₁ means Pretest

O₂ means Posttest

Data Analysis

The data analysis is as follows:

1. Analyze quantitative data through descriptive statistics; Mean and standard deviation.
2. Evaluate the students' creative dance skills before and after implementation. The experimental data are used to analyze the mean and standard deviation of dependent statistical data and t-test.

Chapter 4

Results of Analysis

This study takes undergraduates of Xi'an physical Education University as the research object, and uses Problem-based Learning to development students' creative dance skills and compare the changes of students' creative dance skills. The data analysis results are as follows:

1. Symbols and abbreviations
2. Data analysis results

Details are as follows.

Symbols and Abbreviations

Represent data analysis results based on symbols and semantics. The details

$\bar{X}$ Means average value

SD. Means standard deviation n.

n Means number of students

D Means scores of difference between pre and post class

Df Means degree of freedom

t Means statistical data for t-test value t

** Means statistical significance at level .01

Results of Data Analysis

The Problem-based Learning method was used to development the creative dance skills of undergraduates in Xi'an physical Education University. The researchers conducted the research in the following order:

Part 1. Creative dance skills of 30 dance performance major students in Xi'an physical Education University was analyzed by using Problem-based Learning.

Part 2. Problem-based Learning was used to implement pre-class teaching, and creative dance skills was tested after class.

Part 1. Creative dance skills of 30 dance performance major students in Xi'an physical Education University was analyzed by using Problem-based Learning.

Problem-based Learning is a student-centered teaching method proposed by Howatd Barroes, which is based on problem setting. The most remarkable difference between PBL teaching mode and traditional teaching mode is that Problem-based Learning emphasizes students' subjectivity and focuses on solving practical problems. The learning process is designed in a complex problem situation, and students solve problems in a group cooperation way. The basic characteristics of Problem-based Learning include the following five aspects: taking the problem (driving problem) as the guide and starting learning; In the real teaching situation, students solve problems independently; Students participate in activities in a cooperative way, discuss problems and find solutions to them; development students' comprehensive ability in the process of inquiry; The problem-solving methods explored by students are shared. Applying Problem-based Learning to dance performance courses in colleges and universities, and combining theory with practice organically, is a beneficial attempt to development classroom efficiency and enhance students' creative dance skills.

In this study, the researchers used the Problem-based Learning method to teach. According to the working principle of Problem-based Learning method and the characteristics of dance performance major courses in colleges and universities, a training scheme for the influence of Problem-based Learning method on students' creative dance skills is constructed. This scheme includes the Preparation before class, Raise a question, Create a problem situation, Analyzing and solving problems and Show the results, so as to achieve better teaching results.

Through the pre-evaluation process, students' creative dance skills are tested before class, so that students and teachers can understand the actual situation of creative dance skills, and then strengthen learning, optimize students' motor skills, stimulate students' interest in learning and development students' creative dance skills. After-class tests have developmentd the skills of dance creation.

This study takes 30 freshmen majoring in dance performance in Xi'an physical Education University as the research object to carry out teaching practice. Through pre-class test, group study and after-class test, this paper makes a comparative analysis of students' creative dance skills before and after Problem-based Learning teaching, and understands the changes of students' creative dance skills. Observe students'

performance before and after teaching, adjust the teaching scheme of Problem-based Learning in time, and record students' changes and performance. From the performance of students in each class and the test results after class, we can find that students' creative dance skills are constantly improving.

Specific observation results:

1. Learning Content: Teaching of basic dance movements

Step 1 Preparation before class

At this stage, teachers need to prepare the relevant materials of the Problem-based Learning plan, and prepare the teaching content in advance. By watching a dance video, they can show the students the basic movements contained in the dance, help them to clarify their learning tasks, and at the same time explain the specific process of Problem-based Learning to students, so that students can gradually master the methods to solve problems.

Step 2 Raise a question

At this stage, the most important link is the setting of questions, which is one of the important factors to achieve the expected teaching effect. Teachers need to ask questions in combination with the teaching content and the prepared video materials, and ask students to prepare materials related to the questions.

Step 3 Create a problem situation

At this stage, teachers should create problem situations, carry out teaching closely around teaching objectives, ask questions to students, and explain and demonstrate the technical essentials of basic dance movements to students, so that students can analyze, observe and imitate them.

Step 4 Analyzing and solving problems

At this stage, teachers should divide students into groups, students analyze and discuss problems in groups, and practice dance movements. Teachers will observe and provide immediate guidance and feedback to help learners understand the degree of their goals.

Step 5 Show the results

At this stage, the students' groups are required to answer the questions raised by the teachers and show the basic dance movements learned in this class. Teachers need to comment on the questions answered by students, evaluate the students'

mastery of basic dance movements, point out the shortcomings, and guide students to make corrections to further promote learning.

2. Learning Content: Dance formation and movement connection teaching

Step 1 Preparation before class

At this stage, teachers should prepare teaching materials and preset questions in advance according to the teaching objectives, and issue problem guidance plans.

Step 2 Raise a question

At this stage, Teachers need to ask questions in combination with the teaching content and the prepared video materials, and ask students to prepare materials related to the questions.

Step 3 Create a problem situation

At this stage, teachers should create problem situations related to students, present task lists to students, and help students to clarify their learning tasks. Explain the learning benefits, so that students can gradually master the methods to solve problems.

Step 4 Analyzing and solving problems

At this stage, teachers should divide students into groups, students analyze and discuss problems in the form of groups, and connect dance movements and innovate dance formations. Teachers will observe and provide immediate guidance and feedback to help learners understand the degree of their goals.

Step 5 Show the results

At this stage, students are required not only to show the new knowledge they have mastered, but also to question, communicate and expand their knowledge through mutual guidance and evaluation. Teachers can evaluate students' mastery through observation and testing, and provide specific feedback to further promote learning.

3. Learning Content: Combine music to create dance

Step 1 Preparation before class

At this stage, before class, teachers provide teaching videos and materials and ask corresponding questions. Teachers guide students to study in groups and find out the answers or solutions to problems.

Step 2 Raise a question

The teacher gave the students a tutorial plan in advance. There are two main problems in the tutorial plan: 1. What is the theme of this music and the feelings expressed? 2. How to combine music to create dance clips? Let the students collect information in advance to prepare for analyzing and solving problems later.

Step 3 Create a problem situation

At this stage, teachers are required to set teaching tasks and teaching scenarios, collect information in groups, and solve the difficulties in creating and editing. Teachers integrate the ideas of students in each group, supervise and guide students, so that students can find dance arrangement methods. According to the situations and requirements, members actively participate in dance arrangement.

Step 4 Analyzing and solving problems

At this stage, students in the group are required to analyze and discuss according to the questions raised by the teacher, to find solutions, and to form a consensus within the group. According to the main questions raised by the teacher and the situation created, students put forward a number of more careful small problems and then solve them one by one.

Step 5 Show the results

At this stage, students are required to share the results of the group and finally determine the answers to the questions and show them. Teachers evaluate students' display results.

Part 2. Problem-based Learning was used to implement pre-class teaching, and creative dance skills was tested after class.

Problem-based Learning is applied to the teaching of dance performance course, and the students' creative dance skills before and after teaching are compared and analyzed. The test results of students' creative dance skills before and after the experiment are as follows:

Table 4.1 Students' creative dance skills before and after Problem-based learning Teaching

Student ID	Pre-test Scores (Full Score=30)	Post-test Scores (Full Score=30)	Difference Scores (D)
1	19	23	4
2	17	25	8
3	17	24	7
4	17	22	5
5	16	20	4
6	18	26	8
7	22	27	5
8	15	22	7
9	20	23	3
10	21	23	2
11	18	22	4
12	16	26	10
13	21	27	6
14	24	28	4
15	16	23	7
16	19	24	5
17	17	20	3
18	11	19	8
19	16	19	3
20	21	24	3
21	17	23	6
22	18	24	6
23	18	22	4
24	22	25	3
25	25	28	3
26	17	23	6
27	16	21	5
28	18	20	2

Table 4.1 (Continue)

Student ID	Pre-test Scores (Full Score=30)	Post-test Scores (Full Score=30)	Difference Scores (D)
29	18	23	5
30	23	27	4
$\bar{X}$	18.43	23.43	5
SD.	2.96	2.56	2

As shown in Table 4.1, Problem-based Learning can development students' creative dance skills. The average score of students' creative dance skills before Problem-based Learning teaching is 18.43, and the average score after teaching is 23.43, with an average difference of 5. It can be seen that the creative dance skills after Problem-based Learning teaching is developmentd compared with that before teaching.

The researchers analyzed the data, and used the mean value, standard deviation and T test as relevant samples to analyze the students' creative dance skills before and after Problem-based Learning. The data analysis results are shown in Table 4.2.

Table 4.2 Comparison of Creative Dance Skills

Creative Dance Skills	n	Full Score	$\bar{X}$	SD.	df	t	p
Pre-test	30	30	18.43	2.96	29	-13.69**	.00
Post-test	30	30	23.43	2.56	29		

** Statistically significant at the level. 01 ($p < .01$)

Table 4.2 shows that the students' creative dance skills after class is higher than the average before class by using Problem-based Learning, which shows that Problem-based Learning can effectively development the students' creative dance skills. There is statistical significance at the level of ($P < 0.01$), which is consistent with the research hypothesis.

Chapter 5

Conclusion Discussion and Recommendations

This study takes 30 students majoring in dance performance in Xi'an physical Education University as the research object, and uses Problem-based Learning to development students' creative dance skills. Comparative analysis of students' creative dance skills before and after Problem-based Learning teaching, to understand the development of students' creative dance skills by Problem-based Learning teaching. The specific contents of this study are as follows:

1. Study the related information of Problem-based Learning, including its definition, teaching steps, theoretical basis, teaching design, classroom practice and application. This study focuses on the students' creative dance skills of Xi'an physical Education University.

2. Study the information about the creative dance skills, including basic dance movements, dance formation and movement connection and combined with music to create dance.

3. Create research tools. According to the Problem-based Learning, the teaching scheme is made and studied, including five steps. The first step is prepare before class, the second step is raise a question, the third step is create a situation, the fourth step is Analyzing and solving problems, and the fifth step is show the results.

4. The research tool was submitted to three experts for validity verification, teaching plan scoring standard and creative dance skills scoring standard, and the reliability of the tool was tested by sampling test with consistency index as the consideration standard (IOC: Index of item Objective Congruence).

5. After the research tools are developed and passed, experts will investigate and adopt Problem-based Learning teaching plan. Pre-test was conducted before teaching, and data of students' creative dance skills were collected through the test.

6. Collect data for students, use experimental data, and analyze the average ($\bar{X}$) and standard deviation (SD). and t-test of related samples.

Conclusion

According to the research theme, the research on improving the creative dance skills in students by Problem-based Learning is summarized as follows. According to the evaluation results of experts, the teaching plan and creative dance skills test are made.

1. As an efficient teaching strategy, the core of Problem-based Learning is to promote students' teaching scheme with students as the theme and problem setting as the basic orientation. Applying Problem-based Learning to dance performance courses to realize the application of blended learning and the organic combination of theory and practice is a useful attempt to development teaching effect and enhance students' creative dance skills.

The researcher studied a large number of documents related to Problem-based Learning, and according to the characteristics of the Problem-based Learning, they have integrated them into five steps to make a teaching plan for the first-year dance performance major. The application of Problem-based Learning in dance performance teaching is mainly constructed from five aspects: prepare before class, raise a question, create a situation, Analyzing and solving problems and show the results. Among them, preparation before class is the basic point, asking questions is the core, creating situations is the key, analyzing and solving problems is the guarantee, and displaying results is the result. Data analysis is to evaluate the quality of classroom teaching plan by three experts according to Problem-based Learning, and the evaluation results reflect the quality of classroom teaching plan by experts. Generally speaking, the suitability of research objectives is the most appropriate.

2. Problem-based Learning is used in teaching. Before teaching, the average score of students' creative dance skills is 18.43, and after teaching, the average score is 23.43, with an average difference of 5. The students' creative dance skills after teaching is higher than that before teaching. The Show the resultsed that students' creative dance skills after Problem-based Learning teaching was higher than that before teaching, with statistical significance at the level of ($P < 0.01$).

Therefore, Problem-based Learning can be used as a teaching method of students creative dance skills, which is suitable for dance performance teaching and has certain advantages.

Discussion

Using Problem-based Learning, the research results of improving the creative dance skills of 30 students from dance performance major of first grade students for 1 class are discussed as follows:

1. There are many advantages in the application of 1. Problem-based Learning in college dance performance teaching. Dance performance has standardized basic movements. In the traditional indoctrination teaching mode, simple imitation tends to lead to irregular movements or unclear application of movements. However, under the Problem-based Learning teaching, students majoring in dance performance take the initiative to explore and input the movements in various ways, making it easier to master standardized professional technical movements of dance performance. In addition, by collecting relevant theoretical knowledge or videos about creative dance skills, we can strengthen our understanding of creative dance skills. On the premise of understanding the characteristics of creative dance skills, we can practice creative dance skills again, so that dance movements can be easily and quickly mastered, and creative dance skills can be trained, and then our own creative dance skills can be rapidly developmentd. At the same time, The important content of Problem-based Learning needs to be problem-oriented, which is also an advantage that the traditional teaching process does not have. With questions, students purposefully collect the information needed to integrate the classroom and creative dance skills in their spare time, which will also increase the practice of creative dance skills, thus greatly helping to development the creative dance skills.

2. The researcher studied a large number of documents related to Problem-based Learning, and according to the characteristics of the Problem-based Learning, they have integrated them into five steps to make a teaching plan for the first-year dance performance major. The application of Problem-based Learning in dance performance teaching is mainly constructed from five aspects: prepare before class, raise a question, create a situation, Analyzing and solving problems and show the results. Among them, preparation before class is the basic point, asking questions is the core, creating situations is the key, analyzing and solving problems is the guarantee, and displaying results is the result. Data analysis is to evaluate the quality of classroom teaching plan by three experts according to Problem-based Learning, and the evaluation results reflect the quality of classroom teaching plan by experts. Generally speaking, the suitability of research objectives is the most appropriate. This is because the learning plan is consistent with the concept of Problem-based

Learning, and the curriculum plan contains the key elements of the curriculum plan. Problem-based Learning can better development the students' creative dance skills.

In 2020, Liu Xu applied Problem-based Learning to the teaching of sports dance elective courses, and explored the feasibility and effectiveness of Problem-based Learning in the teaching practice of sports dance elective courses. The positive influence of Problem-based Learning on students' technical level, learning interest and cooperation ability is verified by experiments (Liu Xu, 2020). In 2020, Zhou Ran conducted a comparative teaching experiment by using Problem-based Learning, which verified its feasibility and effectiveness in improving teaching effect (Zhou Ran, 2020). In 2021, Zheng Jianbin applied Problem-based Learning in dance courses. The conclusion shows that Problem-based Learning can effectively development students' learning initiative, learning interest and professional skills (Liu Yujia, 2021).

3. Problem-based Learning is used for teaching. Before teaching, the average score of students' dance creation skills was 18.43, after teaching, the average score was 23.43, with an average difference of 5. After teaching, students' dance creation skills are developmentd compared with those before teaching. The Show the results that after the Problem-based Learning teaching, the students' dance creation skills have developmentd, reaching a statistically significant level ($P < 0.01$), which is consistent with the hypothesis. This is because Problem-based Learning emphasizes the key factors in the learning process. First of all, through the preparation before class is the basic point, we can make clear the teaching content, take students as the center and design problems from the students' point of view. Secondly, by asking questions, students can find out the problem data before class, get to know the course content before class, and learn new knowledge in the process of data query. Thirdly, creating situations can guide students to think actively and explore problems actively through the planning and arrangement of teaching venues. Fourthly, analyzing and solving problems can enable students to brainstorm and discuss problems in groups and development the efficiency of group cooperation. Finally, the results display can promote the classroom atmosphere, so that students can display the results of cooperation in an active atmosphere. The comprehensive application of these links makes the course of dance creation technology more systematic and efficient, thus effectively improving students' dance creation technology.

At present, a large number of studies at home and abroad have confirmed that Problem-based Learning is an important teaching method of dance courses in colleges and universities. Previous studies mainly focused on the teaching of sports dance and other dance subjects. There is not much research on Problem-based Learning in dance performance teaching. Yin Qian (2023) verified that Problem-based Learning has a positive impact on improving students' dance creation skills, independent thinking ability and making students understand the cultural connotation behind dance more deeply through 12 weeks of investigation and testing. Lin Wenzhou (2024) thinks that Problem-based Learning is more effective in improving students' ability of analyzing and solving problems and their ability of cooperation and communication. And it has a significant effect on students' dance expressive force and dance action arrangement.

To sum up, Problem-based Learning can effectively development students' dance creation skills. Using Problem-based Learning, teachers can better design courses, so that students can not only master dance creation techniques in the process of learning dance performances, but also cultivate their interest in learning. At the same time, teachers' diversified teaching methods can stimulate students' learning motivation and development their participation and practical ability. Through these scientific Problem-based Learning, students can not only development their dance creation skills, but also cultivate teamwork and competitive spirit in their study, laying a solid foundation for their future career.

Recommendations

Suggestions on the Application of Research Results

1. The teaching process of dance performance class under Problem-based Learning is not fixed. In teaching, due to the difficulty of learning content in each class and the students' basic situation, timely and effective adjustments should be made in the classroom. Teachers can combine Problem-based Learning with traditional teaching methods to learn from each other's strengths, or they can intersperse the two methods to complete the teaching of dance performance. Especially in the questioning process, teachers should analyze the questions according to the learning situation, and students should understand the questions clearly, and adjust the difficulty of the questions in time to achieve the best results and ensure the quality of the questions. In a word, teachers can design their own teaching process according to the actual situation of the classroom, thus making the classroom more smooth, reasonable and effective.

2. The teaching practice of creative dance skills based on Problem-based Learning is a new attempt of dance performance teaching. Compared with traditional teaching methods, it is very different. Its advantage lies in that Problem-based Learning is a "heuristic" teaching and a student-centered teaching mode, which aims to stimulate students' thinking and exploration interest and cultivate students' problem-solving ability and creativity. Therefore, in the daily dance performance course teaching, we should give full play to the advantages of Problem-based Learning and development the dance performance course design, so that students can better development their dance creation skills and enhance their interest in learning.

3. The research proves that the teaching design based on Problem-based Learning can effectively development students' dance creation skills. In Problem-based Learning teaching, teachers provide appropriate inspiration, guidance and support, encourage students to think independently, explore and solve problems, and take the initiative to learn through observation, experiment and discussion. Therefore, in the teaching practice of other sports, we should actively promote and apply the teaching mode based on Problem-based Learning, and try to systematically development the curriculum design and teaching method selection.

4. Because of the use of Problem-based Learning in dance performance teaching practice, we pay attention to prepare before class, raise a question, create a situation, There will be a lot of data statistics and collection in five teaching links, such as Analyzing and solving problems and Show the Results. Based on the characteristics of Problem-based Learning teaching, the design and evaluation methods of Pilates courses will be optimized. Therefore, in order to achieve better teaching effect, practical problems, projects and teamwork activities should be integrated into teaching, and students should be encouraged to apply knowledge and solve problems in practice. Use a variety of teaching evaluation methods, including project assignments, group reports and presentations, course assessment, etc., to comprehensively evaluate students' comprehensive ability and learning achievements, that is, combine formative evaluation with summative evaluation.

5. When applying Problem-based Learning, the teaching object is also one of the important factors to be considered. It is necessary to consider the students' learning foundation in advance. There are also differences in the levels among students. Some students have been trained in creative dance skills and have good physical flexibility, while others have not received relevant training, so it is still very difficult to learn dance performances. Based on the consideration of the overall

effect, these students should be reasonably divided in Problem-based Learning, and their opinions should be fully considered to divide them into groups, so that the internal groups will be harmonious and members will help each other and complete the learning tasks together. In addition, it is necessary to control the number of students in class, because if there are too many students, the performance of students in class will be chaotic, the attention of teachers will also decline, teachers will not be able to manage effectively in class, and eventually become invalid classes. Finally, it is necessary to mobilize students' enthusiasm to participate in classroom study and discussion, and better carry out Problem-based Learning creative dance skills teaching according to the actual situation of students.

Recommendations for Future Research

1. Further promote the Problem-based Learning in the dance performance course teaching, at the same time, fully consider the differences of students, teach students in accordance with their aptitude, and make a reasonable Problem-based Learning plan according to the different situations of students.

2. In the future, Problem-based Learning can be combined with other dance performance courses in colleges and universities to explore the role of Problem-based Learning in dance performance for students' creative dance skills.

3. In the future, students can be encouraged to study interdisciplinary and interdisciplinary. In the dance performance course based on Problem-based Learning, students can solve problems by combining the theoretical knowledge of sports anatomy and sports biomechanics. Through this meaningful memorization, students can better understand the action points. The development of students' dance creation skills requires students to integrate their knowledge and skills in different fields and apply them flexibly in practice. Therefore, teachers can provide relevant opportunities and resources to cultivate students' interdisciplinary thinking and integration ability.

4. Because the research time is short, it is suggested that long-term follow-up research can be conducted in the future to observe the long-term changes of creative dance skills after students use Problem-based Learning teaching. It can be designed as a long-term experiment for several months or a year to evaluate the lasting influence of Problem-based Learning on creative dance skills more comprehensively.

5. As a new teaching method, Problem-based Learning is applied to the teaching of dance creation technology, but its mode and system are still not perfect, and it needs the continuous efforts of dance performance researchers to give full play to the best effect of the new mode.

6. Teachers' comprehensive mastery of what they have learned and the overall control of the classroom directly affect the teaching quality of the classroom. Teachers should not only develop their professional quality and ability, but also master the theoretical knowledge and specific teaching processes, methods and means related to Problem-based Learning. In this way, we can better control the quality of course teaching and make efforts to change the teaching mode of dance performance.

7. Choose a better problem situation and evaluate the learning effect in time. Situation is the key link in the implementation of Problem-based Learning. The setting of questions is related to the teaching effect of Problem-based Learning. Teachers should sum up the problems in the classroom in time, put forward scientific questions, and make targeted evaluation after the students' discussion. Teachers should encourage students to ask questions themselves, dare to question and boldly put forward their own opinions. Do the organic combination of student evaluation, teacher evaluation and self-evaluation.

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Appendixes

Appendix A
List of Specialists and Letters of
Specialists Invitation for IOC Verification

List of Specialists and Letters of Specialists Invitation for IOC Verification

1. Fangkamol Pethkliang Assistant Professor
 Bansomdejchaopraya Rajabhat University
2. Sasikanchana Yenaeng Assistant Professor
 Bansomdejchaopraya Rajabhat University
3. Guo Wei Professor Dr.
 Xi'an physical Education University

Appendix B
Official Letter



Ref.No. MHESI 0643.14/2787

Bansomdejchaopraya
Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

13 December 2024

RE: Invitation to validate research instrument

Dear Assistant Professor Fangkamol Pethkliang

Miss Guan Jingjing is a graduate student in Master of Education Program in Curriculum and Instruction of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Development of Creative Dance Skills through Problem Based Learning for Students at Xi'an Physical Education University"

The thesis adversity committee has considered that you are an expert in this topic. Your recommendations would be useful for further improvement of this research instrument.

We respectfully request your assistance in validating a research instrument that is attached to this message. We would be grateful for any help you can provide in this matter. We would like to express our sincere appreciation for your time Miss Guan Jingjing at guanjingjing1116@qq.com

Thank you for considering our request

Sincerely,

(Assistant Professor Dr. Tanaput Chancharoen)
Vice Dean, For Dean of the Graduate School

Bansomdejchaopraya Rajabhat University
Tel.+662-473-7000 ext. 1814
www.bsru.ac.th



Ref.No.MHESI 0643.14/2788

Bansomdejchaopraya
Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

13 December 2024

RE: Invitation to validate research instrument

Dear Assistant Professor Dr.Sasikanchana Yenaeng

Miss Guan Jingjing is a graduate student in Master of Education Program in Curriculum and Instruction of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Development of Creative Dance Skills through Problem Based Learning for Students at Xi'an Physical Education University"

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Thank you for considering our request

Sincerely,

(Assistant Professor Dr.Tanaput Chancharoen)
Vice Dean, For Dean of the Graduate School

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Ref.No. MHESI 0643.14/2789

Bansomdejchaopraya
Rajabhat University
1061 Itsaraparb Hirunrujee
Thonburi Bangkok 10600

13 December 2024

RE: Invitation to validate research instrument

Dear Professor Dr.Guo Wei

Miss Guan Jingjing is a graduate student in Master of Education Program in Curriculum and Instruction of Bansomdejchaopraya Rajabhat University. She is undertaking research entitled "Development of Creative Dance Skills through Problem Based Learning for Students at Xi'an Physical Education University"

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Thank you for considering our request

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(Assistant Professor Dr. Tanaput Chancharoen)
Vice Dean, For Dean of the Graduate School

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Appendix C

Research Instruments

Lesson Plan 1

Content

Teaching of basic dance movements

Objective of Learning

1. Understand the specific process of Problem-based Learning, and learn the basic dance movements by using Problem-based Learning.
2. Master the correct dance hand shape, hand position and basic movements.
3. Cultivate students' willpower and cooperation ability.

Concept

Basic dance movements

Dance action is the basic unit of dance, and the basic dance action includes dynamic action, posture, footwork and skills in the process of sports.

Problem -based Learning

In the course, students are guided to analyze and solve related problems in the context by cooperative learning. As the problem-proposer, teachers, teaching guides, organizers and collaborators participate in teaching. Finally, through knowledge integration, they cooperate to solve problems and form a teaching model of problem-solving skills.

Learning Activity

Problem -based Learning is divided into five stages: 1)Preparation before class,2)Raise a question,3) Create a problem situation, 4) Analyzing and solving problems, 5) Show the results , including the following five steps:

Step 1 Preparation before class

At this stage, teachers need to prepare the relevant materials of the Problem-based Learning plan, and prepare the teaching content in advance. By watching a dance video, they can show the students the basic movements contained in the dance, help them to clarify their learning tasks, and at the same time explain the specific process of Problem-based Learning to students, so that students can gradually master the methods to solve problems.

1.1 Clearly tell students the learning objectives of this lesson, including understanding the specific process of Problem-based Learning and learning and mastering the basic movements of dance.

1.2 Teachers organize students to watch the dance video (5 minutes), so that students can observe the basic movements included in the dance.

1.3 Students need to carefully observe the video content and record the answers.

Step 2 Raise a question

At this stage, the most important link is the setting of questions, which is one of the important factors to achieve the expected teaching effect. Teachers need to ask questions in combination with the teaching content and the prepared video materials, and ask students to prepare materials related to the questions.

2.1 Teachers need to play the videos specified in this lesson and publish questions, such as: 1) What basic movements are included in the dance video? 2) What are the technical essentials of these actions?

2.2 According to the problems to be solved in this class, each group is required to collect information through WeChat official account or Tik Tok related platforms in advance.

2.3 When the teacher demonstrates the dance movements to be taught in this class, the teacher needs to emphasize the fluency and coordination of the movements and explain the principle behind each movement.

Step 3 Create a problem situation

At this stage, teachers should create problem situations, carry out teaching closely around teaching objectives, ask questions to students, and explain and demonstrate the technical essentials of basic dance movements to students, so that students can analyze, observe and imitate them.

3.1 Teachers need to arrange the class according to the course content, and show pictures and videos of the basic dance movements, and ask situational questions.

3.2 Teachers combine the creation of situations to explain the essentials of different dance movements, so that students can understand the standard basic dance movements.

3.3 Teachers demonstrate the basic movements of various dances, so that students can observe and understand the essentials of the movements.

3.4 The teacher demonstrates the correct basic dance movements again, so that students can observe and imitate them.

Step 4 Analyzing and solving problems

At this stage, teachers should divide students into groups, students analyze and discuss problems in groups, and practice dance movements. Teachers will observe and provide immediate guidance and feedback to help learners understand the degree of their goals.

4.1 The teacher discusses the key techniques and tactics in the competition to make the students realize the importance of learning badminton.

4.2 The teacher explained the history and cultural background of badminton in detail, as well as the basic rules of the game and the layout of the field.

4.3 Practice the basic dance movements in groups, so that students can observe each other and provide feedback.

Step 5 Show the results

At this stage, the students' groups are required to answer the questions raised by the teachers and show the basic dance movements learned in this class. Teachers need to comment on the questions answered by students, evaluate the students' mastery of basic dance movements, point out the shortcomings, and guide students to make corrections to further promote learning.

5.1 Students present and report their learning results in groups.

5.2 Teachers evaluate students' mastery of basic dance movements by observing students' practice and conducting simple dance basic movement tests.

5.3 Teachers give positive feedback and encouragement to students who have good mastery, and provide specific development suggestions to students who need development.

Measurement and evaluation

1. Pretest of Creative dance skills test Basic dance movements.
2. Posttest of Creative dance skills test Basic dance movements.

Resource equipment

1. The PPT of basic dance movements
2. Dance performance video

Assessment form for the validity of Lesson Plan

Research Title: Development creative dance skills through Problem -based Learning for students of Xi'an physical Education University

Research Objectives:

1. To use Problem -based Learning to development creative dance skills of students Xi'an physical Education University.
2. To compare students' creative dance skills before and after the implementation of Problem -based Learning .

Directions:

Please assess the congruence between components of the lesson plan based on Problem -based Learning theory by putting ✓ in the box according to the following criteria.

Rating is +1. There is an opinion that is "consistent to relevant. "

Rating is 0. There is an opinion that "Not sure it consistent to relevant. "

Rating is -1. There is an opinion that "Inconsistent with relevant. "

No.	Questions	Assessment Results			Suggestion
		+1	0	- 1	
1	The teaching content conforms to the learning objectives.				
2	The learning objectives are consistent with the subject matter.				
3	The Learning Processes are related to teaching.				
4	Learning activities are related to Problem-based Learning.				
5	Show the actions related to the study subjects.				
6	There are various assessments related with learning objectives.				
7	The measurement and evaluation related with Learning objectives.				

Sign.....Assessor

(.....)

Date...../...../.....

Creative dance skills test for Pretest-Posttest for Creative dance skills

Creative dance skills	Score and criterion		
	3	2	1
1. Standard degree of basic movements	The body posture is very standard and the dance movements are beautiful.	The body posture is relatively standard and the dance movements are correct.	The action is not standardized, and there are many mistakes.
2. Basic motion control	The strength of the dance movements is well controlled and the movements are elastic.	The strength of the dance movements is average, and the movements are more elastic, but slightly stiff.	The strength control of the action is poor, and it is slack or stiff.
3. Expressiveness of dance movements	Dance movements and expressions are in place.	The expressive force of dance movements is slightly poor, and the normative and emotional expression of movements is slightly weak.	The expressive force of dance movements is poor, the dance movements are not standardized, and the expressions are not in place.

Assessment form for the validity of Creative dance skills test for Pretest-Posttest for Basic knowledge of dance performance

Research Title: Development creative dance skills through Problem -based Learning for students of Xi'an physical Education University

Research Objectives:

1. To use Problem -based Learning to development creative dance skills of students Xi'an physical Education University.
2. To compare students' creative dance skills before and after the implementation of Problem -based Learning .

Directions:

Please assess the congruence between components of the lesson plan based on Problem -based Learning theory by putting ✓ in the box according to the following criteria.

Rating is +1. There is an opinion that is "consistent to relevant."

Rating is 0. There is an opinion that "Not sure it consistent to relevant."

Rating is -1. There is an opinion that "Inconsistent with relevant."

No.	Questions	Assessment Results			Suggestion
		+1	0	- 1	
1	Standard degree of basic movements				
2	Basic motion control				
3	Expressiveness of dance movements				

Sign.....Assessor

(.....)

Date...../...../.....

Lesson Plan 2

Content

Dance formation and movement connection teaching (4 hours)

Objective of Learning

1. Master the essentials of dance formation arrangement and action connection.
2. The mastered dance movements can be initially connected and displayed.
3. Have the ability to analyze and solve problems.

Concept

Dance formation

Dance formation refers to the arrangement and combination of dancers in space according to a specific arrangement in dance performance, which shows the overall aesthetic feeling and inner emotion of dance works through dynamic changes.

Movement connection

Dance movement cohesion refers to the close connection between movements, without the feeling of breaking or abrupt. Dancers need to control the internal strength of the body and express their external movements to realize the seamless connection between movements. This continuity is not only reflected in the coherence of the action itself, but also in the gradual change of the rhythm, speed and strength of the action. By maintaining the continuity of movements, dance works can present a smooth and natural aesthetic feeling in one go.

Problem -based Learning is divided into five stages: 1) Preparation before class, 2) Raise a question, 3) Create a problem situation, 4) Analyzing and solving problems, 5) Show the results , including the following five steps:

Step 1 Preparation before class

At this stage, teachers should prepare teaching materials and preset questions in advance according to the teaching objectives, and issue problem guidance plans.

1.1 The teacher arranges the dance classroom in advance, and hangs pictures of beautiful dance moves and dance formations around the wall of the classroom.

1.2 Students need to find out the relevant information of the problem guidance plan issued by the teacher, and make records, and have an idea about the series connection of dance formation and dance movements, and find some pictures of beautiful dance movements and formations and difficult movements through network means

Step 2 Raise a question

At this stage, Teachers need to ask questions in combination with the teaching content and the prepared video materials, and ask students to prepare materials related to the questions.

2.1 Teachers need to play the videos specified in this lesson and publish questions, such as: 1) Besides the basic moves learned in the last lesson, what other beautiful dance moves are there? 2) What are the dance formations? 3) How to display the learned dance movements coherently?

2.2 According to the problems to be solved in this class, each group is required to collect information through WeChat WeChat official account or Tik Tok related platforms in advance.

Step 3 Create a problem situation

At this stage, teachers should create problem situations related to students, present task lists to students, and help students to clarify their learning tasks. Explain the learning benefits, so that students can gradually master the methods to solve problems.

1.1 The teacher arranges the dance classroom in advance, and hangs pictures of beautiful dance moves and dance formations around the wall of the classroom.

1.2 Teachers prepare dance-related videos or pictures in advance, and show them to students in class, so that students can experience this feeling, inspire the connection of dance movements and dance formations, and let students think from other's perspective. If you are allowed to dance this movement, can it be displayed and so beautiful?

3.3 Teachers need to explain the application scenarios of these dance movements and formations in actual competitions.

Step 4 Analyzing and solving problems

At this stage, teachers should divide students into groups, students analyze and discuss problems in the form of groups, and connect dance movements and innovate dance formations. Teachers will observe and provide immediate guidance and feedback to help learners understand the degree of their goals.

4.1 The teacher discusses the key techniques and tactics in the competition to make the students realize the importance of learning badminton.

4.2 The teacher explained the history and cultural background of badminton in detail, as well as the basic rules of the game and the layout of the field.

4.3 Students find out a number of basic dance movements, and show the dance movements together, and show the dance formation in groups.

Step 5 Show the results

At this stage, students are required not only to show the new knowledge they have mastered, but also to question, communicate and expand their knowledge through mutual guidance and evaluation. Teachers can evaluate students' mastery through observation and testing, and provide specific feedback to further promote learning.

5.1 Each group shows the dance movements and dance formations in series in groups.

5.2 Teachers evaluate and guide the results displayed by students.

5.3 Teachers give positive feedback and encouragement to students who have good mastery, and provide specific development suggestions to students who need development.

Measurement and evaluation

1. Pretest of Creative dance skills test Basic dance movements.
2. Posttest of Creative dance skills test Basic dance movements.

Resource equipment

1. Dance action cohesion and PPT of dance formation
2. Video of basic dance movements.

Assessment form for the validity of Lesson Plan

Research Title: Development creative dance skills through Problem -based Learning for students of Xi'an physical Education University

Research Objectives:

1. To use Problem -based Learning to development creative dance skills of students Xi'an physical Education University.
2. To compare students' creative dance skills before and after the implementation of Problem -based Learning .

Directions:

Please assess the congruence between components of the lesson plan based on Problem -based Learning theory by putting ✓ in the box according to the following criteria.

Rating is +1. There is an opinion that is "consistent to relevant."

Rating is 0. There is an opinion that "Not sure it consistent to relevant."

Rating is -1. There is an opinion that "Inconsistent with relevant."

No.	Questions	Assessment Results			Suggestion
		+1	0	- 1	
1	The teaching content conforms to the learning objectives.				
2	The learning objectives are consistent with the subject matter.				
3	The Learning Processes are related to teaching.				
4	Learning activities are related to Problem-based Learning.				
5	Show the actions related to the study subjects.				
6	There are various assessments related with learning objectives.				
7	The measurement and evaluation related with Learning objectives.				

Sign.....Assessor

(.....)

Date...../...../.....

Creative dance skills test for Pretest-Posttest for Creative dance skills

Stance and Footwork	Score and criterion		
	3	2	1
1. The location of the shuttlecock's landing point	Can flexibly use the service strategy, the serve landing point is accurate, can adjust the service direction and depth according to the game situation.	The stability of the serve has been developmentd, and the serve landing point can be controlled more accurately, with fewer mistakes.	Action integrity and cohesion are poor.
2. Dance formation changed	The dance formation is neat and varied.	The dance formation is relatively regular and the formation changes a lot.	The dance formation is irregular, and the formation changes less.

Assessment form for the validity of Creative dance skills test for Pretest-Posttest for Batismanship of net shots

Research Title: Development creative dance skills through Problem -based Learning for students of Xi'an physical Education University

Research Objectives:

1. To use Problem -based Learning to development creative dance skills of students Xi'an physical Education University.
2. To compare students' creative dance skills before and after the implementation of Problem-based Learning .

Directions:

Please assess the congruence between components of the lesson plan based on Problem -based Learning theory by putting ✓ in the box according to the following criteria.

Rating is +1. There is an opinion that is "consistent to relevant."

Rating is 0. There is an opinion that "Not sure it consistent to relevant."

Rating is -1. There is an opinion that "Inconsistent with relevant."

No.	Questions	Assessment Results			Suggestion
		+1	0	- 1	
1	The location of the shuttlecock's landing point				
2	Dance formation changed				

Sign.....Assessor

(.....)

Date...../...../.....

Lesson Plan 3

Content

Combine music to create dance (4 hours)

Objective of Learning

1. Master dance creation methods
2. Make students have the ability of dance performance.
3. Cultivate students' artistic innovation ability.

Concept

Create dance

Creation and arrangement of dance means that the choreographer creates, selects, transforms and weaves the idea of the work by means of dance, making it a dance work with unique style and artistic appeal. This process not only requires the choreographer to have a solid dance foundation, but also needs a keen artistic perception, rich imagination and innovative way of thinking.

Learning Activity

Problem -based Learning is divided into five stages: 1)Preparation before class,2)Raise a question,3) Create a problem situation, 4) Analyzing and solving problems, 5) Show the results , including the following five steps:

Step 1 Preparation before class

At this stage, before class, teachers provide teaching videos and materials and ask corresponding questions. Teachers guide students to study in groups and find out the answers or solutions to problems.

1.1 Teachers guide students to group, teachers ask questions, and provide students with relevant information to encourage students to actively collect relevant information.

1.2 Students discuss problems in groups and cooperate to collect relevant information to solve problems.

1.3 In class, the teacher first clarifies the teaching objectives and learning tasks of this class to the students.

Step 2 Raise a question

The teacher gave the students a tutorial plan in advance. There are two main problems in the tutorial plan: 1. What is the theme of this music and the

feelings expressed? 2. How to combine music to create dance clips? Let the students collect information in advance to prepare for analyzing and solving problems later.

2.1 Teachers put forward questions in combination with teaching content and teaching purpose.

2.2 Students need to collect relevant information according to the questions raised by teachers, so as to facilitate the follow-up group discussion and analysis of problems.

Step 3 Create a problem situation

At this stage, teachers are required to set teaching tasks and teaching scenarios, collect information in groups, and solve the difficulties in creating and editing. Teachers integrate the ideas of students in each group, supervise and guide students, so that students can find dance arrangement methods. According to the situations and requirements, members actively participate in dance arrangement.

3.1 Teachers prepare videos or pictures related to dance composition in advance, and show them to students in class, so that students can understand this feeling and master the methods of dance composition.

3.2 Students are required to share their feelings after enjoying music and videos, and teachers need to put forward the specific teaching objectives of the course, that is, to combine music to create dances.

Step 4 Analyzing and solving problems

At this stage, students in the group are required to analyze and discuss according to the questions raised by the teacher, to find solutions, and to form a consensus within the group. According to the main questions raised by the teacher and the situation created, students put forward a number of more careful small problems and then solve them one by one.

4.1 Teachers organize students to analyze and solve problems in groups.

4.2 First of all, each person in the student group gives full play to his autonomy, and expresses his own views according to the information he consulted and the presentation of his actions after practice.

4.3 Students discuss in groups and compose dances with music.

4.4 Teachers need to provide immediate feedback, pointing out students' strengths and areas that need development.

Step 5 Show the results

At this stage, students are required to share the results of the group and finally determine the answers to the questions and show them. Teachers evaluate students' display results.

5.1 The teacher asked the members in each group to choose a classmate to show it, or to show it together and encourage the group members to show it together.

5.2 Teachers evaluate students' dances combined with music.

5.3 Teachers give positive feedback and encouragement to students with good choreography, and provide specific suggestions for students who need development.

Measurement and evaluation

1. Pre-test of creative dance skills tests the ability to compose and arrange dances with music.

2. Post-test of creative dance skills combined with music to create and arrange dance ability.

Resource equipment

1. PPT about the basic knowledge of dance creation
2. Music about dance creation

Assessment form for the validity of Lesson Plan

Research Title: Development creative dance skills through Problem -based Learning for students of Xi'an physical Education University

Research Objectives:

1. To use Problem -based Learning to development creative dance skills of students Xi'an physical Education University.
2. To compare students' creative dance skills before and after the implementation of Problem -based Learning .

Directions:

Please assess the congruence between components of the lesson plan based on Problem -based Learning theory by putting ✓ in the box according to the following criteria.

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Rating is 0. There is an opinion that "Not sure it consistent to relevant."

Rating is -1. There is an opinion that "Inconsistent with relevant."

No.	Questions	Assessment Results			Suggestion
		+1	0	- 1	
1	The teaching content conforms to the learning objectives.				
2	The learning objectives are consistent with the subject matter.				
3	The Learning Processes are related to teaching.				
4	Learning activities are related to Problem-based Learning.				
5	Show the actions related to the study subjects.				
6	There are various assessments related with learning objectives.				
7	The measurement and evaluation related with Learning objectives.				

Sign.....Assessor

(.....)

Date...../...../.....

Creative dance skills test for Pretest-Posttest for Creative dance skills

Batsmanship of net shots	Score and criterion		
	3	2	1
1. With the feeling of music	Dance movements are coordinated with music rhythm, and the rhythm of dance movements is accurate.	The sense of music in the dance movements is slightly poor, and the rhythm of a small number of dance movements is inaccurate.	There is a lack of fit between action rhythm and music, and the grasp of music rhythm is inaccurate.
2. Dance movement arrangement	The choreography of dance movements is innovative, the performance form is novel and creative, and the students' dance movements are textured.	The choreography of dance movements is more innovative, the performance form is slightly creative, and the dance movements are more standardized.	The dance movements and performance forms are not creative, or the dance movements are not standardized enough.
3. Dance expressive force	Students are full of emotions, vivid expressions and strong appeal in the performance.	Students' emotions are full, their expressions are vivid and infectious.	Students' emotions are not full enough, their expressions are not vivid enough, and they lack expressiveness and appeal.

Assessment form for the validity of Creative dance skills test for Pretest-Posttest for Batismanship of net shots

Research Title: Development creative dance skills through Problem -based Learning for students of Xi'an physical Education University

Research Objectives:

1. To use Problem -based Learning to development creative dance skills of students Xi'an physical Education University.
2. To compare students' creative dance skills before and after the implementation of Problem -based Learning .

Directions:

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Rating is 0. There is an opinion that "Not sure it consistent to relevant."

Rating is -1. There is an opinion that "Inconsistent with relevant."

No.	Questions	Assessment Results			Suggestion
		+1	0	- 1	
1	With the feeling of music				
2	Dance movement arrangement				
3	Dance expressive force				

Sign.....Assessor

(.....)

Date...../...../.....

Appendix D

The Results of the Quality Analysis of Research
Instruments

Evaluation criteria for creative dance skills

Evaluation on items	Score and criterion		
	3	2	1
Creation techniques (40 points)	The dance theme is clear, the structure is complete, the conception is ingenious, the stage scheduling is reasonable, and the teacher scores 30~40 points.	The dance theme is clear, the structure is complete, and the stage scheduling is reasonable. The teacher's score is 15~29.	The dance theme is not clear enough, the structure is not complete enough, the stage scheduling is not reasonable enough, and the teacher's score is < 15.
Dance movements (20 points)	The dance movements are very standardized, coordinated and beautiful, and the teacher scores 15-20 points.	The dance movements are standardized, coordinated and graceful, and the teacher scores 8-14 points.	The dance movements are not standardized, coordinated and graceful, and the teacher's score is <8.
Music rhythm (20 points)	The dance rhythm is very accurate, and the teacher scores 15-20 points.	The dance rhythm is more accurate, and the teacher scores 8-14 points.	The dance rhythm is not accurate enough, and the teacher's score is <8.
Arranging performances (20 points)	Dance arrangement and performance can better reflect the theme and artistic conception of the work, and the teacher scores 15-20 points.	The choreography and performance reflect the general theme and artistic conception of	The and choreography performance did not well reflect the theme and artistic conception of the

Evaluation on items	Score and criterion		
	3	2	1
		the work, and the teacher scores 8-14 points.	work, and the teacher scored < 8.
Creation techniques (40 points)	The dance theme is clear, the structure is complete, the conception is ingenious, the stage scheduling is reasonable, and the teacher scores 30~40 points.	The dance theme is clear, the structure is complete, and the stage scheduling is reasonable. The teacher's score is 15~29.	The dance theme is not clear enough, the structure is not complete enough, the stage scheduling is not reasonable enough, and the teacher's score is < 15.

Appendix E
Certificate of English



This is to certify that

Ms. Guan Jingjing

Achieved BSRU English Proficiency Test (BSRU-TEP) level

C1

Given on 25th January 2021

A handwritten signature in black ink, which appears to read 'Kulsirin', is positioned above the printed name of the director.

(Assistant Professor Dr Kulsirin Aphiratvoradej)

Director

Appendix F
Turnitin Plagiarism Check Report

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Aker, Margaret. "A Conceptual Kaleidoscope: Higher Education Academics Activating Problem-Based Learning and Engaging 21st Century Skills.", Concordia University Chicago, 2020

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Appendix G

The Document for Accept Research/ Full Paper



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Subject: Acceptance of Research Presentation at the 3rd National and International Academic Conference

Dear Guan Jingjing

With reference to your research paper titled "**Development creative dance skills through Problem-based Learning for students of Xi'an physical Education University**", which you have submitted for presentation and publication at the 3rd National and International Academic Conference jointly organized by Sripatum University, Khon Kaen Campus, the Association of Secondary School Administrators of Thailand (ASSAT), and affiliated universities, we are pleased to inform you that your research paper has successfully passed the quality evaluation by the committee of experts.

The review committee has accepted your paper for presentation and publication on Saturday, March 8, 2025. The detailed schedule and presentation program will be provided in due course. Kindly proceed with the registration fee payment via the attached QR Code and confirm your participation by March 5, 2025.

For your information.

Sincerely,

(Associate Professor Dr. Sutham Thammatatsananon)

Deputy Dean, Graduate School of Management

Acting on behalf of the Dean



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Sripatum University, Khon Kaen
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**Development creative dance skills through Problem-based Learning for students
of Xi'an physical Education University**

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Abstract

The purpose of this study is: 1) to development the creative dance skills of students in Xi 'an Physical Education University by using Problem-based Learning; 2) Compare students' creative dance skills before and after the implementation of Problem-based Learning . The sample group is 30 students from Xi 'an Physical Education University. Through a cluster random sampling from dance performance major of first grade students for 1 class. The research tools include 1) teaching plans based on Problem-based Learning 2) creative dance skills test. The data were statistically analyzed, and the standard deviation and t-test Dependent samples. The Show the results that: 1) Problem-based Learning can effectively development students' creative dance skills It is divided into five teaching steps is step 1: Prepare before class. step 2: Raise a question. step 3: Create a problem situation. step 4: Analyzing and solving problems and step 5: Show the results. 2) After the Problem-based Learning, students' creative dance skills are higher than before the teaching of significant at the level. 01($p < .01$)

Keywords: Creative dance skills, Problem-based Learning, physical Education

Introduction

The state attaches importance to the cultivation of students' innovative skills. Under the background of the new era, China pays special attention to the cultivation of college students' innovative skills. In the Decision on Deepening Education Reform and Promoting Quality Education in an All-round Way published by the State Council, the Central Committee of the Communist Party of China in 2009, it was pointed out that higher education should pay attention to cultivating college students' Creative dance skills, practical skills and entrepreneurial spirit, and generally development their humanistic quality and scientific quality (the Central Committee of the Communist Party of China, the State Council, 2009). In 2019, the Central Committee of the Communist Party of China and the State Council issued "China Education Modernization 2035", which pointed out: "Adhere to the development path of education in Socialism with Chinese characteristics, follow the laws of education, persist in reform and innovation, and cultivate socialist builders and successors with all-round development in morality, intelligence, physique, beauty and labor" (the Central Committee of the Communist Party of China, the State Council,

2019). In 2021, "Guiding Opinions of General Office of the State Council on Further Supporting College Students' Innovation and Entrepreneurship" also proposed to enhance the innovative spirit and skills of college students and development teachers' innovative education and teaching skills (the State Council, 2019). As an art form with the body as the medium, dance requires students to have higher practical skills and innovative skills.

Dance has not only become an important part of people's life, but also has epoch-making spiritual culture. Creating a pleasing and unique dance can make people mentally positive and physically energetic. There are many kinds of dances, and different forms of dance have their own merits. Only the dance with constant innovation can have vitality, meet the appreciation requirements of the broad masses of the people, and be in line with the spirit of the times. Every dance work is inseparable from the wisdom and hard work of the dance creators. Creative dance skills can not only create ornamental value, but also create social value. An excellent dance work can not only beautify the soul and enrich the spiritual world, but also inspire people to reflect on their personal values and world outlook, and promote the spiritual and moral development of the whole society (Li Haiyan, 2022). Dance creation teaching meets the needs of talent cultivation in today's society. Creative dance skills is the use of the external dynamics of the human body to show the inner activities, which requires both physical and mental participation. It is not only related to human science, but also related to brain science.

Creative dance skills teaching can not only cultivate students' skills to learn techniques, but also cultivate students' innovative consciousness and practical skills. It can also cultivate students' unique aesthetic perspective and skills to grasp the characteristics of materials keenly, and cultivate students' comprehensive quality and perfect personality charm in all aspects, which is the key goal of college training. Therefore, Creative dance skills is not only an important skills that dancers must possess, but also a compulsory course for undergraduates majoring in dance.

At present, there are some shortcomings in Creative dance skills teaching. For along time, cultivating and improving students' Creative dance skills has become the difficulty and focus of teaching. Through classroom observation, as well as consulting a large number of Creative dance skills classroom summaries and classroom notes, it can be concluded that students have the following problems in teaching: First, the curriculum is relatively single and lacks systematicness. Although it covers basic contents such as theory, skills and practice, the knowledge system is relatively scattered and lacks organic connection. The teaching content focuses on theoretical explanation, and the proportion of practical links is small, so students have few opportunities to practice. Second, the evaluation method is relatively simple, mainly focusing on the completion of the final work, lacking the assessment of the Creative dance skills process, and unable to comprehensively evaluate the students' Creative dance skills. Third, there is a lack of practice platforms inside and outside the school, which makes it difficult to provide students with enough opportunities to exercise their Creative dance skills, which restricts the development of Creative dance skills. Faced with the above problems, it is urgent to optimize teaching methods,

development students' Creative dance skills and promote the overall development of dance teaching quality.

The Problem-based Learning provides a feasible path for improving Creative dance skills technology. At present, the society demands more college students, and the traditional teaching mode can't meet the needs of students. Under the traditional teaching mode, most of them take teachers as the main body, ignoring the cultivation of students' independent thinking and innovative technology. Secondly, in the traditional teaching process, the relationship between teachers and students is unequal, teachers are in an authoritative position and students are in a subordinate position. Students are often afraid to express their different ideas and blindly accept teachers' ideas. This unequal relationship between teachers and students not only has a bad influence on students' learning experience, but also restricts the benign communication between teachers and students. (Zhong Xiaojuan, 2021)

In dance teaching, under the traditional teaching mode, students have some problems, such as low interest in learning and low initiative. In order to change this phenomenon, we must expand dance teaching research and combine new teaching mode for teaching exploration (Zhang Jing, 2014). Problem-based Learning originated from the west, was first introduced by Chinese medicine, and then gradually expanded to other disciplines. Problem-based Learning is a kind of teaching mode which is teacher-led, problem-centered, student-centered, and emphasizes that students solve practical problems through cooperative inquiry. Compared with other teaching modes, Problem-based Learning pays more attention to students' inquiry into problems and the process of problem solving. Teachers design the teaching content into problem situations and bring them into the classroom, so that students can constantly accept challenging tasks or problems in the learning process, and finally solve the problems and tasks through the way of autonomy, cooperation and inquiry. Students can acquire new knowledge in the process of analyzing and solving problems, development their autonomous learning skills, and experience the sense of accomplishment of gaining knowledge, thus stimulating students' interest in learning. Dance has the characteristics of many kinds of dances, difficult skills and varied combinations. Applying Problem-based Learning in dance performance class can help students to brainstorm through cooperative learning with others, which can well solve more complicated problems in the learning process, deepen their understanding of technical movements, development students' dance skills and Creative dance skills, enhance their physical health and development classroom teaching effect (Liu Xu, 2020).

To sum up, in recent years, China has paid special attention to the cultivation of students' Creative dance skills which is very important for their future. Development. Creative dance skills is the comprehensive embodiment of students' innovation and practical skills, and the cultivation of students' Creative dance skills can't be neglected in dance teaching. However, at present, students' Creative dance skills is still weak, and traditional teaching methods can't give full play to the role of improving students' Creative dance skills. Therefore, teachers should expand the research of dance classroom teaching in colleges and universities, put forward new ideas of

innovative teaching, promote the application of new teaching modes, constantly bring forth the old and bring forth the new in the reform of dance teaching, and explore a new mode that is suitable for dance education and teaching and developments students' skills to create and edit dance.

Research Objective

1. To develop Creative dance skills through Problem-based Learning for students of Xi'an physical Education University
2. To compare the Creative dance skills of students before and after implementing the Problem-based Learning.

Research Methodology

Population

Dance students of Xi'an physical Education University, is first grade of 5 classes of 30 students each, a total of 150 students.

The Sample Group

Through a cluster random sampling, a survey was conducted among 30 students from dance performance major of first grade vocational students for 1 class. Each class consisted of Creative dance skills a mix of high, middle and low lever.

Definition of Terms

Problem-based Learning is often translated as "Problem-based Learning" and "problem-oriented learning method", and it is also a widely concerned teaching mode in China in recent years. It is a kind of teaching mode, which takes teachers as the leading factor, students as the main body, takes questions as the starting point of learning, takes cultivating students' autonomous learning skills and comprehensive skills of inquiry as the teaching goal, and teachers use situational teaching to enable students to complete the knowledge construction of teaching content in the process of constantly asking questions and solving problems. It is divided into five teaching steps:

Step 1: : Prepare before class. First, teachers need to clarify the teaching content, create situations and think about related issues. Secondly, it is the analysis of learning situation. Teachers should fully understand the basic situation of students, take students as the center, and from the perspective of students, find the most suitable teaching content from dance movements and dance contents. Third, set teaching objectives. Teachers should consider the requirements of setting dance teaching objectives comprehensively.

Step 2: Raise a question. According to the teaching objectives of the dance course, the teaching content is determined, and according to the dance content to be taught, the problem guide plan is issued to the students in advance, and the main problems are put forward, and the

students are required to find relevant materials and videos about the problems according to the problems, carefully find and practice them, and record the relevant materials on the problem guide plan for use in class.

Step 3: Create a situation. Teachers plan and arrange teaching venues, design situations, guide students to think positively, take the initiative to explore and think about problems, be good at finding problems in learning, learn to analyze these problems, find out the causes of these problems and solve them in time, and finally development students' skills to explore and learn actively.

Step 4: Analyze and solve the problem. The group members discuss the questions raised by the teachers together, and the group leader arranges and collects relevant information and materials according to the division of labor. Then, the main questions raised by the teachers among the groups may lead to new problems in the analysis process. By combining the materials and videos of the problem guide case with the students' previous dance knowledge, the problems are further analyzed, the difficulties in the problems are analyzed, and solutions and schemes are found.

Step 5: Show the results. Firstly, it is necessary to evaluate the effect after the implementation of the scheme, and secondly, to evaluate the whole process of the implementation of the scheme; And let the students show the results of the group in the form of group report. The students express and explain the knowledge they have learned and the design scheme, and compare it with the expected effect to confirm whether the problem has been successfully solved. In summing up the results and performance, learners are required to display the results in a variety of ways to development students' mastery of knowledge. Teachers can development students' skills to understand and express professional terms by reporting problem solutions to students, introducing knowledge principles and sharing learning experiences. At the same time, students should not copy book knowledge in expressing their opinions, but should have their own opinions and attitudes and fully expand their thinking to learn knowledge. In the whole process, teachers should encourage students to speak actively and give them the opportunity to fully express themselves. After the speech, their peers can make supplementary speeches and give feedback to answer questions.

Research Instruments

The research tools used by the researchers include a Problem-based Learning model and the following assessment criteria for dance choreography skills as follows:

Teaching plan based on Problem-based Learning: This teaching plan is designed according to the basic principle and mechanism of Problem-based Learning and the teaching characteristics of dance performance specialty. According to the teaching objectives and syllabus of dance performance major, combined with the teaching objectives, contents and assessment standards of the course, complete the teaching plan. According to relevant theories and existing research, complete the experimental teaching plan. This study applies Problem-Based Learning (PBL) to develop students' creative dance skills through three structured chapters: basic dance

movements, choreography formation, and integrating music into dance, totaling 12 class hours. Each lesson follows a five-step PBL process: (1) Preparation teachers design meaningful questions, analyze students' learning needs, and set clear objectives; (2) Raising a question students receive problem guides in advance to research and practice; (3) Creating a situation teachers arrange learning environments that encourage active exploration; (4) Analyzing and solving problems students collaborate in groups, researching, discussing, and refining their solutions; and (5) Showing results students present their work, receive feedback, and improve their performance. This structured approach enhances independent thinking, teamwork, and dance creativity while requiring teachers to carefully plan and facilitate student-centered learning experiences.

The researchers submitted these plans to three experts for review to verify their accuracy. Experts have verified the effectiveness of the course plan development process. The consistency index of planning IOC at least once is 0.67-1.00. The consistency index is greater than or equal to 0.50, which is considered suitable for further study. The result of planning IOC at least once is 0.67-1.00.

Creative dance skills test.

The evaluation of creative dance skills consists of three main areas: mastering basic hand positions, creating formation changes, and integrating music with dance movements. To assess these skills, the researchers designed an evaluation scale based on choreography skills and learning evaluation tools. This scale includes five key evaluation components measured through specific criteria, with scores assigned based on predefined standards. The consistency index for measurement is set at 0.50 or higher, ensuring the evaluation's reliability, with an Index of Item-Objective Congruence (IOC) value ranging from 0.67 to 1.00.

The evaluation process includes three categories: (1) Teaching basic dance movements, which assesses movement accuracy, control, expressiveness, rhythm, and intensity; (2) Dance formation and movement connection, which evaluates spatial awareness, transition fluency, cooperation, action connections, and overall coordination; and (3) Completing creative dance with music, which measures music comprehension, creative imagination, synchronization with music, structural integrity, and artistic expression. Each category is rated on a three-point scale, from excellent (3) to needs improvement (1).

To ensure accuracy, the checklist is refined based on expert recommendations before submission. The evaluation form is reviewed and validated by thesis instructors, followed by expert review for content validity. Experts assess the evaluation standards against measurement criteria to ensure alignment with research requirements. The IOC value for all criteria is confirmed to be 1.00, meeting the standards for objective consistency.

Measurement reliability is a crucial aspect of this process. The scoring system follows a structured approach, where +1 indicates that the criteria meet measurement goals, 0 indicates uncertainty, and -1 signifies inconsistency with the objectives. The consistency index of each evaluation component must be at least 0.50 for further research consideration.

Finally, the reliability value of the evaluation standards is confirmed at 0.96, indicating strong consistency and suitability for research application. This structured evaluation framework ensures that creative dance skills are assessed effectively, supporting both student development and the refinement of dance education methodologies.

Data Collection

The data collection is as follows:

Invite 3 experts, issue official documents of experts of Bansomdejchaopraya Rajabhat University, and provide information on research content and research instruments: lesson plans and assessment form, for consideration Index of Objective Consistency (IOC). Collect IOC inspection data from 3 professional experts.

This research is experimental research. According to the researcher's established assessment form, the scores were scored before and after the experiment, and the evaluation data were collected. The following is the experimental design:

Table 1 Experimental Design by One-Group Pretest-posttest Design

Group	Pretest	Experimental	Posttest
R	O ₁	X	O ₂

The meaning of the symbols used in the experimental design.

R means Random Sampling

X means experimental

O₁ means Pretest

O₂ means Posttest

1. Data Analysis

The data analysis is as follows:

Analyze quantitative data through descriptive statistics; Mean and standard deviation.

Evaluate the students' skills of choreography before and after implementation. The experimental data are used to analyze the mean and standard deviation of dependent statistical data and t-test Dependent samples.

Table 2 Students' Creative dance skills before and after Problem-based Learning Teaching

Student ID	Pre-test Scores (Full Score=45)	Post-test Scores (Full Score=45)	Difference Scores (D)
1	34	38	4
2	32	40	8
3	32	39	7
4	32	37	5

Student ID	Pre-test Scores (Full Score=45)	Post-test Scores (Full Score=45)	Difference Scores (D)
5	31	35	4
6	33	41	8
7	37	42	5
8	30	37	7
9	35	38	3
10	36	38	2
11	33	37	4
12	31	41	10
13	36	42	6
14	39	43	4
15	31	38	7
16	34	39	5
17	32	35	3
18	26	34	8
19	31	34	3
20	36	39	3
21	32	38	6
22	33	39	6
23	33	37	4
24	37	40	3
25	40	43	3
26	32	38	6
27	31	36	5
28	33	35	2
29	33	38	5
30	38	42	4
X	33.43	38.43	5
SD.	2.96	2.56	2

As shown in Table 2 Problem-based Learning can development students' Creative dance skills. The average score of students' Creative dance skills before Problem-based Learning teaching is 33.43, and the average score after teaching is 38.43, with an average difference of 5. It can be seen that the Creative dance skills after Problem-based Learning teaching is development compared with that before teaching.

The researchers analyzed the data, and used the mean value, standard deviation and T test as relevant samples to analyze the students' Creative dance skills before and after Problem-based Learning. The data analysis results are shown in Table 3.

Table 3 Comparison of Creative dance skills

Creative dance skills	n	full score	$\bar{X}$	SD.	df	t	p
Pre test	30	45	33.43	2.96	29	13.69**	.00
Post test	30	45	38.43	2.56	29		

**Statistically significant at the level. 01($p < .01$)

Table 3 shows that the students' Creative dance skills after class is higher than the average before class by using Problem-based Learning, which shows that Problem-based Learning can effectively development the students' Creative dance skills. There is statistical significance at the level of ($P < 0.01$), which is consistent with the research hypothesis.

Conclusion

According to the research theme, the research on improving the creative dance skills in students by Problem-based Learning is summarized as follows. The research results are summarized into 2 issues that are consistent with the research objectives and research hypothesis testing as follows:

1. Study results of use Problem-based Learning to develop Creative dance skills through for students of Xi'an physical Education University. As an efficient teaching strategy, the core of Problem-based Learning is to promote students' teaching scheme with students as the theme and problem setting as the basic orientation. Applying Problem-based Learning to dance performance courses to realize the application of blended learning and the organic combination of theory and practice is a useful attempt to development teaching effect and enhance students' creative dance skills. The researcher studied a large number of documents related to Problem-based Learning, and according to the characteristics of the Problem-based Learning, they have integrated them into five steps to make a teaching plan for the first-year dance performance major. The application of Problem-based Learning in dance performance teaching is mainly constructed from five aspects: prepare before class, raise a question, create a situation, Analyzing and solving problems and show the results. Among them, preparation before class is the basic point, asking questions is the core, creating situations is the key, analyzing and solving problems is the guarantee, and displaying results is the result. Data analysis is to evaluate the quality of classroom teaching plan by three experts according to Problem-based Learning, and the evaluation results reflect the quality of classroom teaching plan by experts. Generally speaking, the suitability of research objectives is the most appropriate.

2. Problem-based Learning is used in teaching. Before teaching, the average score of students' creative dance skills is 18.43, and after teaching, the average score is 23.43, with an average difference of 5. The students' creative dance skills after teaching is higher than that before teaching. The results showed that students' creative dance skills after Problem-based Learning teaching was higher than that before teaching, with statistical significance at the level of ($P < 0.01$). Therefore, Problem-based Learning can be used as a teaching method of students' creative dance skills, which is suitable for dance performance teaching and has certain advantages.

Discussion

Using Problem-based Learning, the research results of improving the creative dance skills of 30 students from dance performance major of first grade students for 1 class are discussed as follows:

1. There are many advantages in the application of Problem-based Learning in college dance performance teaching. Dance performance has standardized basic movements. In the traditional indoctrination teaching mode, simple imitation tends to lead to irregular movements or unclear application of movements. However, under the Problem-based Learning teaching, students majoring in dance performance take the initiative to explore and input the movements in various ways, making it easier to master standardized professional technical movements of dance performance. In addition, by collecting relevant theoretical knowledge or videos about creative dance skills, we can strengthen our understanding of creative dance skills. On the premise of understanding the characteristics of creative dance skills, we can practice creative dance skills again, so that dance movements can be easily and quickly mastered, and creative dance skills can be trained, and then our own creative dance skills can be rapidly developed. At the same time, the important content of Problem-based Learning needs to be problem-oriented, which is also an advantage that the traditional teaching process does not have. With questions, students purposefully collect the information needed to integrate the classroom and creative dance skills in their spare time, which will also increase the practice of creative dance skills, thus greatly helping to develop the creative dance skills.

2. The researcher studied a large number of documents related to Problem-based Learning, and according to the characteristics of the Problem-based Learning, they have integrated them into five steps to make a teaching plan for the first-year dance performance major. The application of Problem-based Learning in dance performance teaching is mainly constructed from five aspects: prepare before class, raise a question, create a situation, Analyzing and solving problems and show the results. Among them, preparation before class is the basic point, asking questions is the core, creating situations is the key, analyzing and solving problems is the guarantee, and displaying results is the result. Data analysis is to evaluate the quality of classroom teaching plan by three experts according to Problem-based Learning, and the evaluation results reflect the quality of classroom teaching plan by experts. Generally speaking, the suitability of research objectives is the most appropriate. This is because the learning plan is consistent with the

concept of Problem-based Learning, and the curriculum plan contains the key elements of the curriculum plan. Problem-based Learning can better development the students' creative dance skills.

In 2020, Liu Xu applied Problem-based Learning to the teaching of sports dance elective courses, and explored the feasibility and effectiveness of Problem-based Learning in the teaching practice of sports dance elective courses. The positive influence of Problem-based Learning on students' technical level, learning interest and cooperation ability is verified by experiments (Liu Xu, 2020). In 2020, Zhou Ran conducted a comparative teaching experiment by using Problem-based Learning, which verified its feasibility and effectiveness in improving teaching effect (Zhou Ran, 2020). In 2021, Zheng Jianbin applied Problem-based Learning in dance courses. The conclusion shows that Problem-based Learning can effectively development students' learning initiative, learning interest and professional skills (Liu Yujia, 2021).

3. Problem-based Learning is used for teaching. Before teaching, the average score of students' dance creation skills was 18.43, after teaching, the average score was 23.43, with an average difference of 5. After teaching, students' dance creation skills are development compared with those before teaching. The Show the results that after the Problem-based Learning teaching, the students' dance creation skills have development, reaching a statistically significant level ($P < 0.01$), which is consistent with the hypothesis. This is because Problem-based Learning emphasizes the key factors in the learning process. First of all, through the preparation before class is the basic point, we can make clear the teaching content, take students as the center and design problems from the students' point of view. Secondly, by asking questions, students can find out the problem data before class, get to know the course content before class, and learn new knowledge in the process of data query. Thirdly, creating situations can guide students to think actively and explore problems actively through the planning and arrangement of teaching venues. Fourthly, analyzing and solving problems can enable students to brainstorm and discuss problems in groups and development the efficiency of group cooperation. Finally, the results display can promote the classroom atmosphere, so that students can display the results of cooperation in an active atmosphere. The comprehensive application of these links makes the course of dance creation technology more systematic and efficient, thus effectively improving students' dance creation technology.

At present, a large number of studies at home and abroad have confirmed that Problem-based Learning is an important teaching method of dance courses in colleges and universities. Previous studies mainly focused on the teaching of sports dance and other dance subjects. There is not much research on Problem-based Learning in dance performance teaching. Yin Qian (2023) verified that Problem-based Learning has a positive impact on improving students' dance creation skills, independent thinking ability and making students understand the cultural connotation behind dance more deeply through 12 weeks of investigation and testing. Lin Wenzhou (2024) thinks that Problem-based Learning is more effective in improving students' ability

of analyzing and solving problems and their ability of cooperation and communication. And it has a significant effect on students' dance expressive force and dance action arrangement.

To sum up, Problem-based Learning can effectively development students' dance creation skills. Using Problem-based Learning, teachers can better design courses, so that students can not only master dance creation techniques in the process of learning dance performances, but also cultivate their interest in learning. At the same time, teachers' diversified teaching methods can stimulate students' learning motivation and development their participation and practical ability. Through these scientific Problem-based Learning, students can not only development their dance creation skills, but also cultivate teamwork and competitive spirit in their study, laying a solid foundation for their future career.

Recommendation

1. Suggestions on the application of research results

1.1 The teaching process of dance performance class under Problem-based Learning is not fixed. In teaching, due to the difficulty of learning content in each class and the students' basic situation, timely and effective adjustments should be made in the classroom. Teachers can combine Problem-based Learning with traditional teaching methods to learn from each other's strengths, or they can intersperse the two methods to complete the teaching of dance performance. Especially in the questioning process, teachers should analyze the questions according to the learning situation, and students should understand the questions clearly, and adjust the difficulty of the questions in time to achieve the best results and ensure the quality of the questions. In a word, teachers can design their own teaching process according to the actual situation of the classroom, thus making the classroom more smooth, reasonable and effective.

1.2 The teaching practice of creative dance skills based on Problem-based Learning is anew attempt of dance performance teaching. Compared with traditional teaching methods, it is very different. Its advantage lies in that Problem-based Learning is a "heuristic" teaching and a student-centered teaching mode, which aims to stimulate students' thinking and exploration interest and cultivate students' problem-solving ability and creativity. Therefore, in the daily dance performance course teaching, we should give full play to the advantages of Problem-based Learning and development the dance performance course design, so that students can better development their dance creation skills and enhance their interest in learning.

1.3 The research proves that the teaching design based on Problem-based Learning can effectively development students' dance creation skills. In Problem-based Learning teaching, teachers provide appropriate inspiration, guidance and support, encourage students to think independently, explore and solve problems, and take the initiative to learn through observation, experiment and discussion. Therefore, in the teaching practice of other sports, we should actively promote and apply the teaching mode based on Problem-based Learning, and try to systematically development the curriculum design and teaching method selection.

1.4 Because of the use of Problem-based Learning in dance performance teaching practice, we pay attention to prepare before class, raise a question, create a situation, there will be a lot of data statistics and collection in five teaching links, such as Analyzing and solving problems and Show the Results. Based on the characteristics of Problem-based Learning teaching, the design and evaluation methods of Pilates courses will be optimized. Therefore, in order to achieve better teaching effect, practical problems, projects and teamwork activities should be integrated into teaching, and students should be encouraged to apply knowledge and solve problems in practice. Use a variety of teaching evaluation methods, including project assignments, group reports and presentations, course assessment, etc., to comprehensively evaluate students' comprehensive ability and learning achievements, that is, combine formative evaluation with summative evaluation.

1.5 When applying Problem-based Learning, the teaching object is also one of the important factors to be considered. It is necessary to consider the students' learning foundation in advance. There are also differences in the levels among students. Some students have been trained in creative dance skills and have good physical flexibility, while others have not received relevant training, so it is still very difficult to learn dance performances. Based on the consideration of the overall effect, these students should be reasonably divided in Problem-based Learning, and their opinions should be fully considered to divide them into groups, so that the internal groups will be harmonious and members will help each other and complete the learning tasks together. In addition, it is necessary to control the number of students in class, because if there are too many students, the performance of students in class will be chaotic, the attention of teachers will also decline, teachers will not be able to manage effectively in class, and eventually become invalid classes. Finally, it is necessary to mobilize students' enthusiasm to participate in classroom study and discussion, and better carry out Problem-based Learning creative dance skills teaching according to the actual situation of students.

2. Recommendations for future research

2.1 Further promote the Problem-based Learning in the dance performance course teaching, at the same time, fully consider the differences of students, teach students in accordance with their aptitude, and make a reasonable Problem-based Learning plan according to the different situations of students.

2.2 In the future, Problem-based Learning can be combined with other dance performance courses in colleges and universities to explore the role of Problem-based Learning in dance performance for students' creative dance skills.

2.3 In the future, students can be encouraged to study interdisciplinary and interdisciplinary. In the dance performance course based on Problem-based Learning, students can solve problems by combining the theoretical knowledge of sports anatomy and sports biomechanics. Through this meaningful memorization, students can better understand the action points. The development of students' dance creation skills requires students to integrate their knowledge and skills in different fields and apply them flexibly in practice. Therefore, teachers can

provide relevant opportunities and resources to cultivate students' interdisciplinary thinking and integration ability.

2.4 Develop new teaching method, Problem-based Learning is applied to the teaching of dance creation technology, but its mode and system are still not perfect, and it needs the continuous efforts of dance performance researchers to give full play to the best effect of the new mode.

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